JAVASCRIPT

FOR PDF FORMS

appligent
DOCUMENT SOLUTIONS

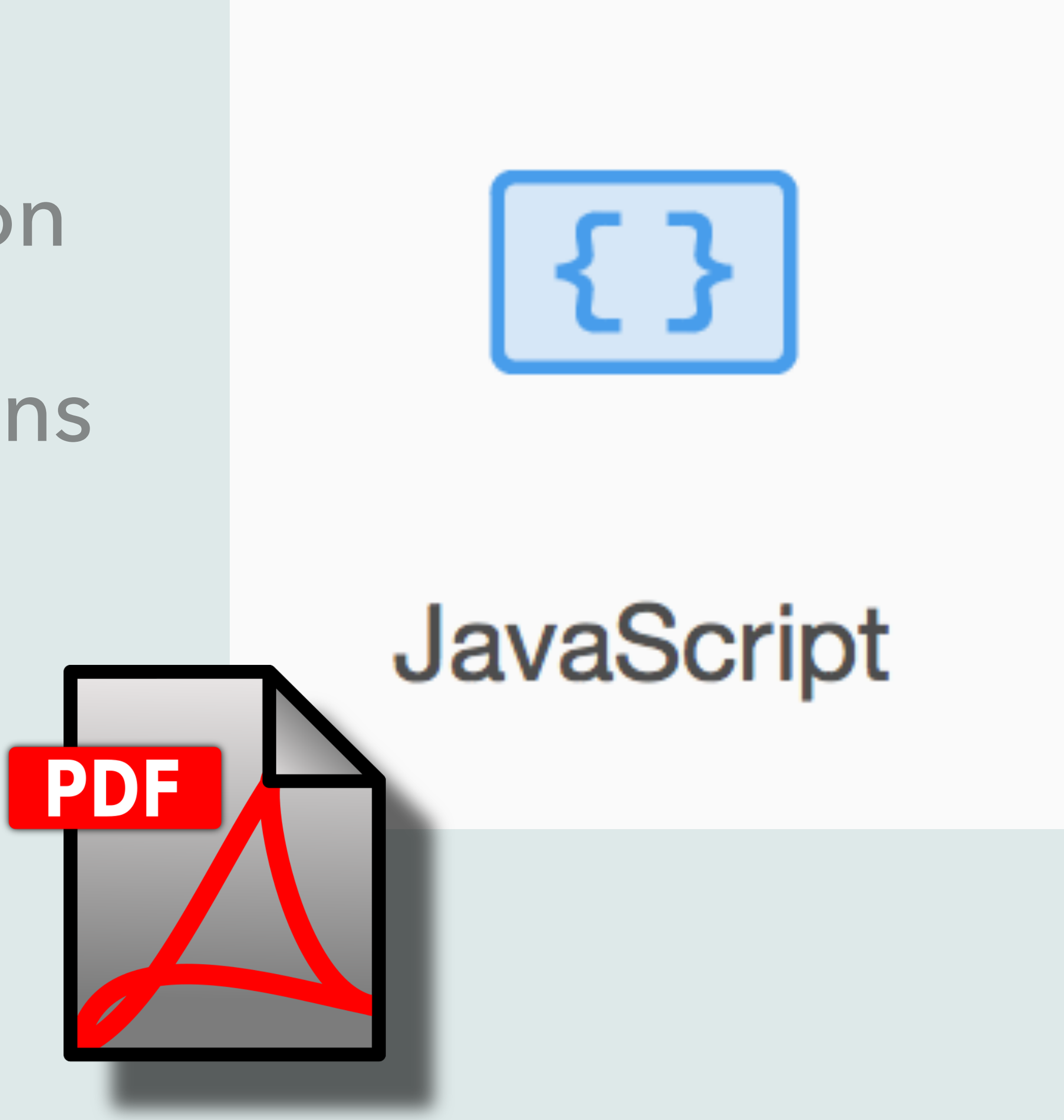
THE BASICS

- One of the easiest and most powerful ways to customize PDF files.
- Based on JavaScript version 1.5 of ISO-16262 (formerly known as ECMAScript)
- Implements objects, methods, and properties that enable you to manipulate PDF files, produce database-driven PDF files, modify the appearance of PDF files, and much more.
- Can be tied to a specific PDF document, page, field, or button and even to a user action.

Source: https://www.adobe.com/devnet/acrobat/javascript.html

ADVANTAGES

- Custom Calculations
- Complex, Form Specific Validation
- Manipulate Fields and Annotations
- Power of Data Arrays
- Extensive Tool Set for Problem Solving



LIMITATIONS

- Acrobat Pro vs. Reader
- Inconsistencies in Reader Mobile
- Security Restrictions
- Pushing the Limits of PDF
- FormCalc vs. Javascript

JAVASCRIPT RESOURCES

Acrobat DC SDK Documentation - Javascript

Adobe
https://help.adobe.com/en_US/acrobat/acrobat_dc_sdk/2015/HTMLHelp/#t=Acro12_MasterBook%2FJavaScript_SectionPage%2FJavaScript_SectionPage.htm

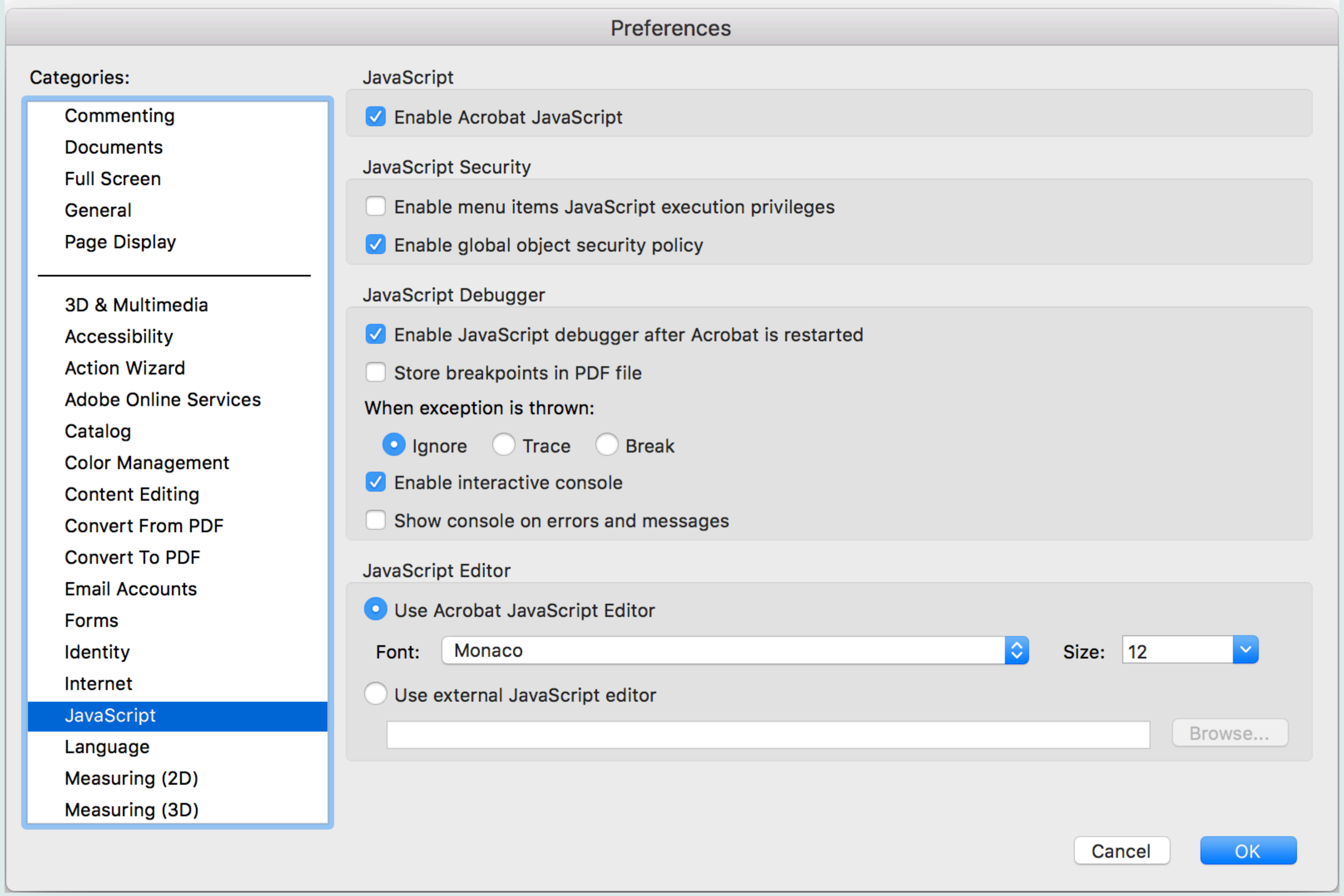
Acrobat & PDF Scripting Learning Center & Library

Thom Parker - Windjack Solutions
https://www.pdfscripting.com/

Adobe LiveCycle ES4 - Scripting Reference

Adobe
https://help.adobe.com/en_US/livecycle/11.0/DesignerScriptingRef/index.html

JAVASCRIPT PREFERENCES



JavaScript

☑ Enable Acrobat JavaScript

JavaScript Security

□ Enable menu items JavaScript execution privileges

☑ Enable global object security policy

JavaScript Debugger

☑ Enable JavaScript debugger after Acrobat is restarted

□ Store breakpoints in PDF file

When exception is thrown:

● Ignore ○ Trace ○ Break

☑ Enable interactive console

□ Show console on errors and messages

JavaScript Editor

● Use Acrobat JavaScript Editor

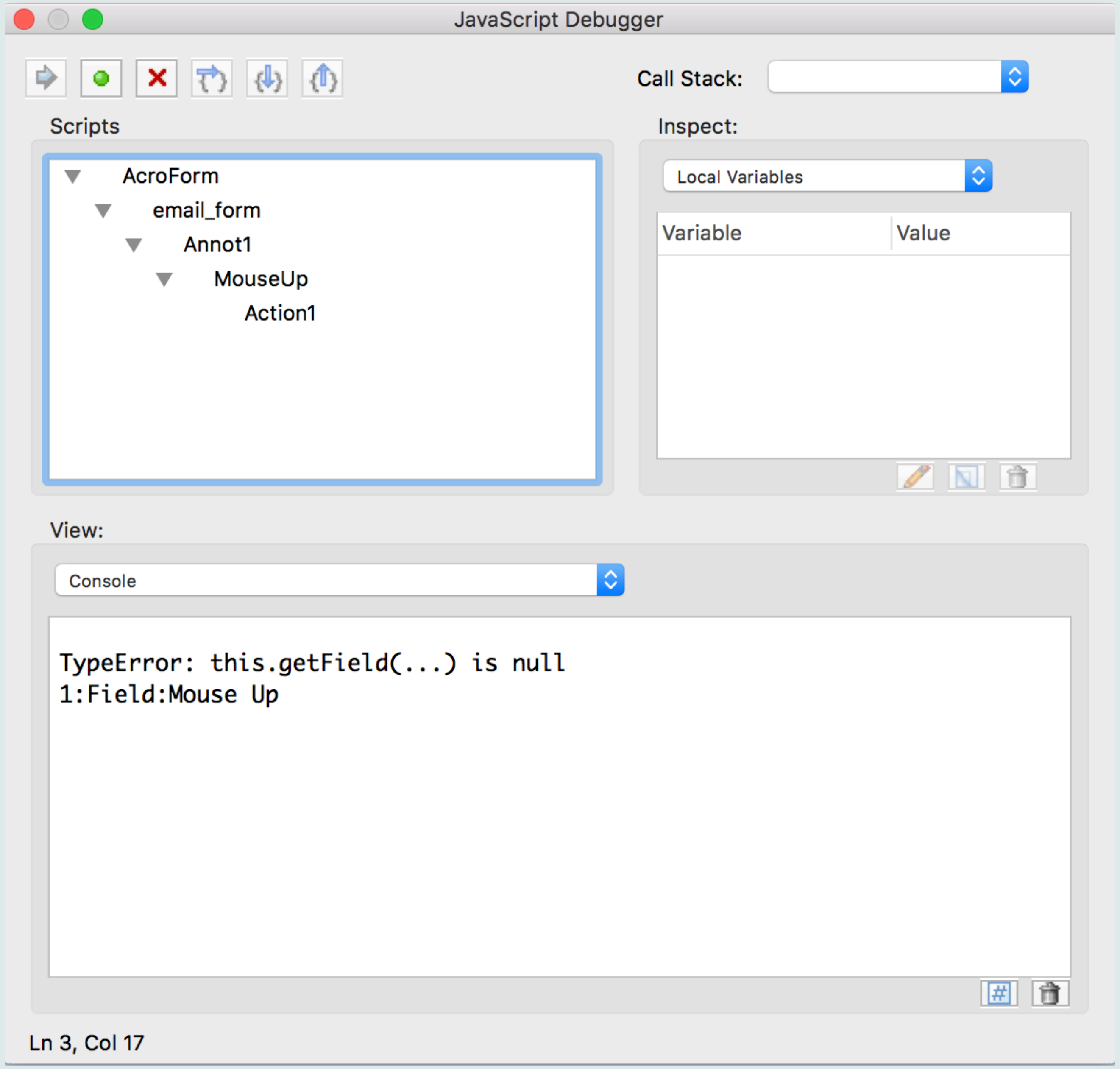
Font: Monaco Size: 12

○ Use external JavaScript editor

- Enable Acrobat Javascript
- Show console on errors and messages

GENERAL DEBUGGING

- Using app.alert
- Default Messages in the JavaScript Debugger
- Using console.println to write messages to the Debugger Console window



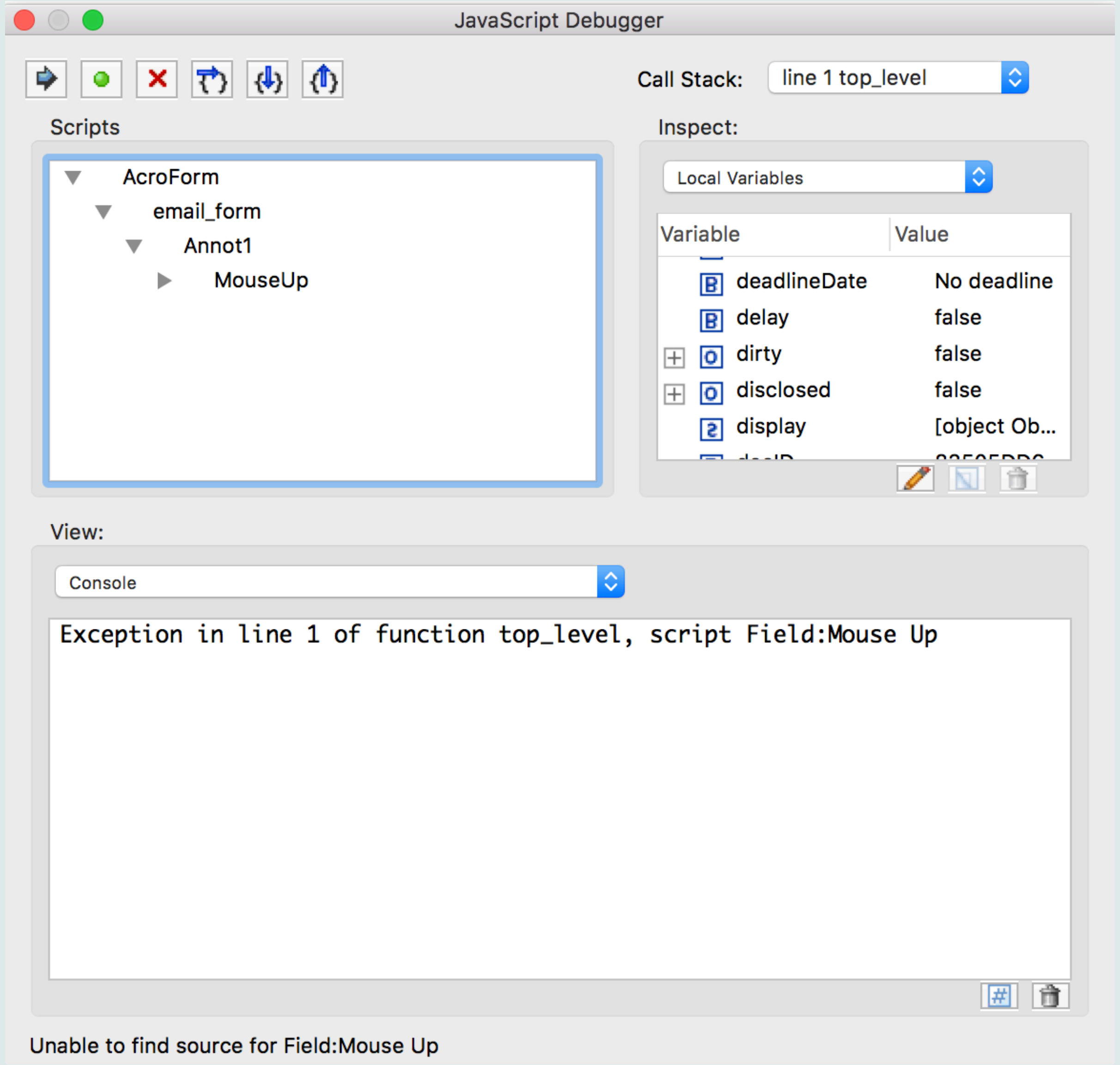
```
TypeError: this.getField(...) is null
1:Field:Mouse Up
```

THE JAVASCRIPT DEBUGGER CONSOLE

The Acrobat JavaScript Console

Thom Parker for the Adobe Acrobat Users Library

https://acrobatusers.com/tutorials/javascript_console

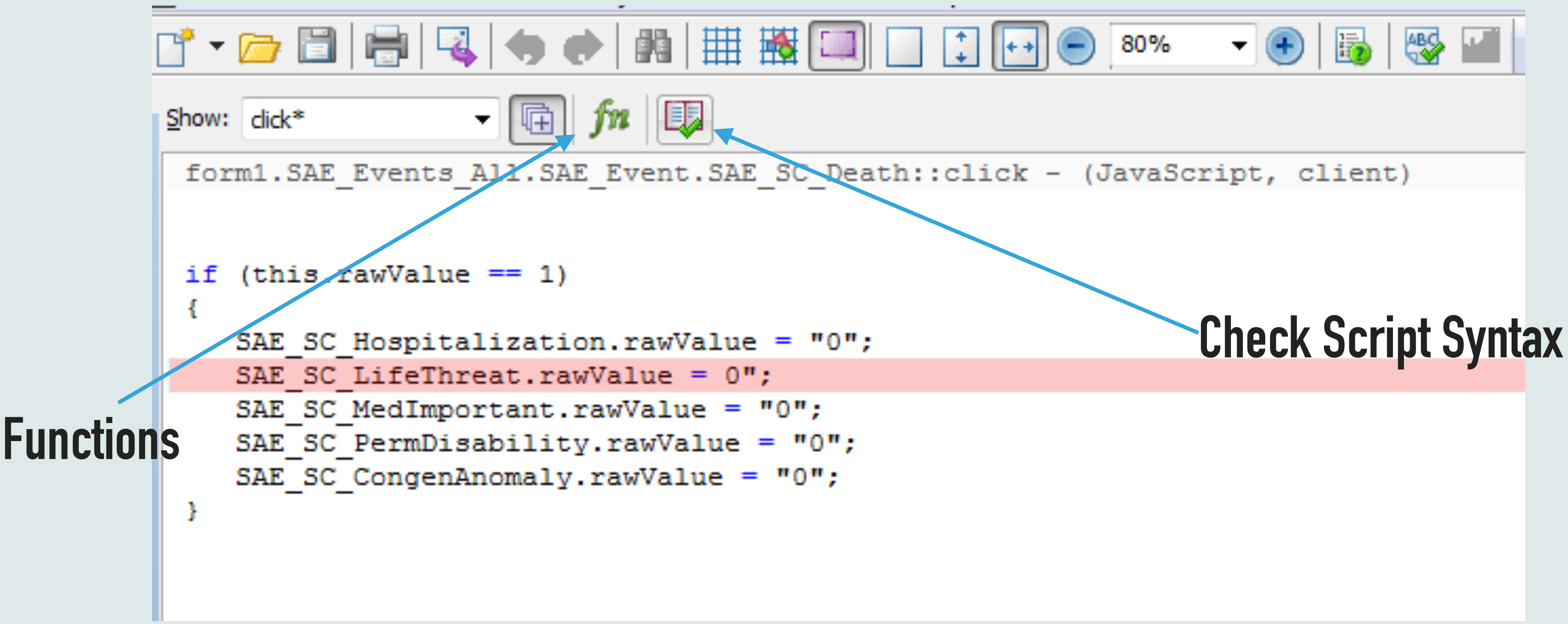


Variable	Value
deadlineDate	No deadline
delay	false
dirty	false
disclosed	false
display	[object Ob...

```
Exception in line 1 of function top_level, script Field:Mouse Up
```

Unable to find source for Field:Mouse Up

DEBUGGING IN LIVECYCLE



```
form1.SAE_Events_All.SAE_Event.SAE_SC_Death::click - (JavaScript, client)


if (this.rawValue == 1)
{
    SAE_SC_Hospitalization.rawValue = "0";
    SAE_SC_LifeThreat.rawValue = 0";
    SAE_SC_MedImportant.rawValue = "0";
    SAE_SC_PermDisability.rawValue = "0";
    SAE_SC_CongenAnomaly.rawValue = "0";
}
```

Check Script Syntax

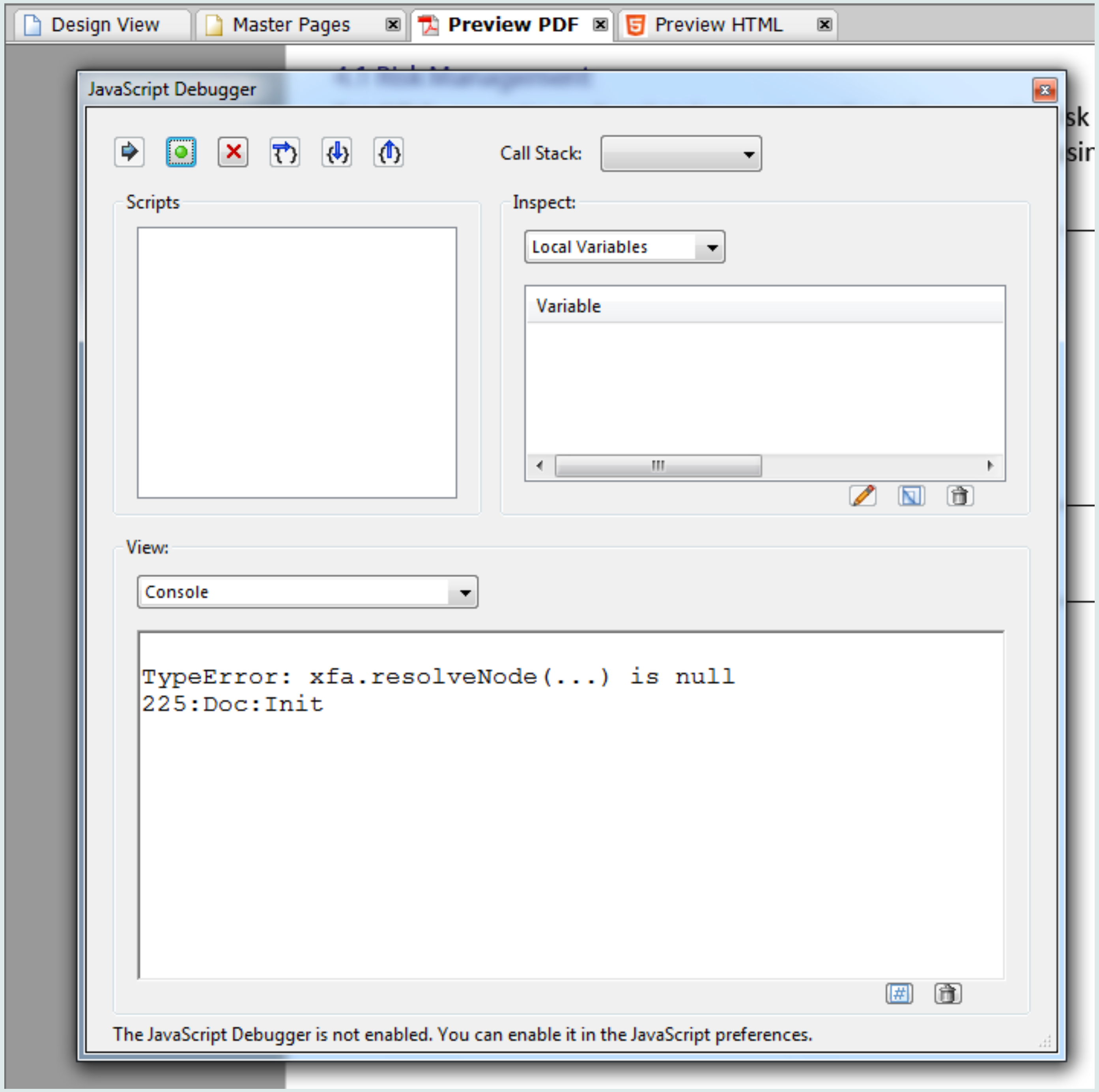
Functions

- The Script Editor window has a Function features display available functions as you type.
- Check Script Syntax will find any typos or general syntax errors and highlight those lines for review.

THE CONSOLE WINDOW IN LIVECYCLE

- The Preview PDF feature in LC Designer will use the Preference setting from your local install of Reader or Acrobat.

- Use console.printLn or app.alert just as you would in Acrobat.



```
TypeError: xfa.resolveNode(...) is null
225:Doc:Init
```

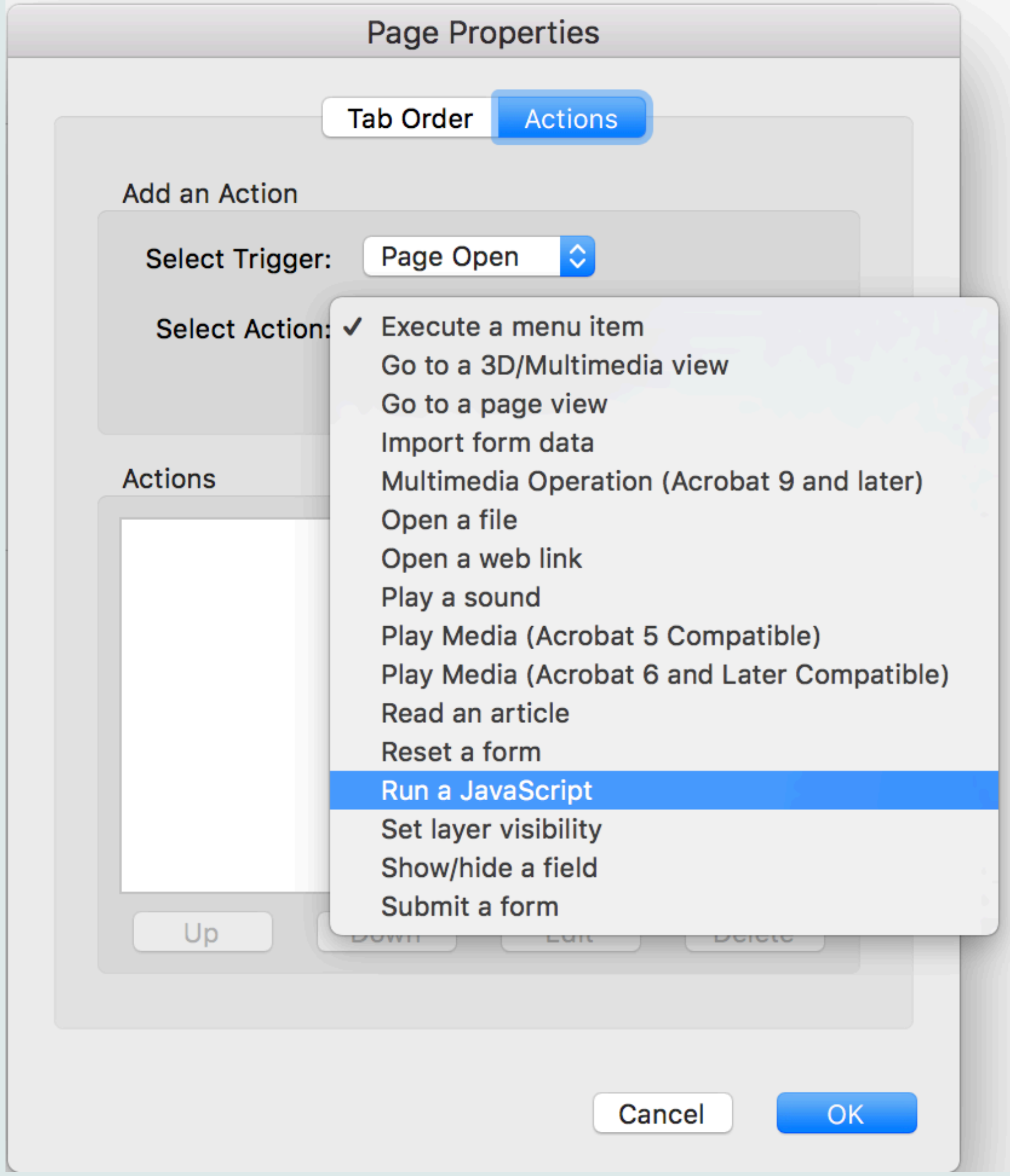
The JavaScript Debugger is not enabled. You can enable it in the JavaScript preferences.

ADDING JS TO FORMS

JAVASCRIPT IN ACTIONS

You can use JavaScript anywhere you can trigger an Action.

- Page, Bookmark, Form Field
- Field Triggers Include:
  - Mouse Up
  - Mouse Down
  - Mouse Enter
  - Mouse Exit
  - On Focus
  - On Blur



Page Properties

Add an Action

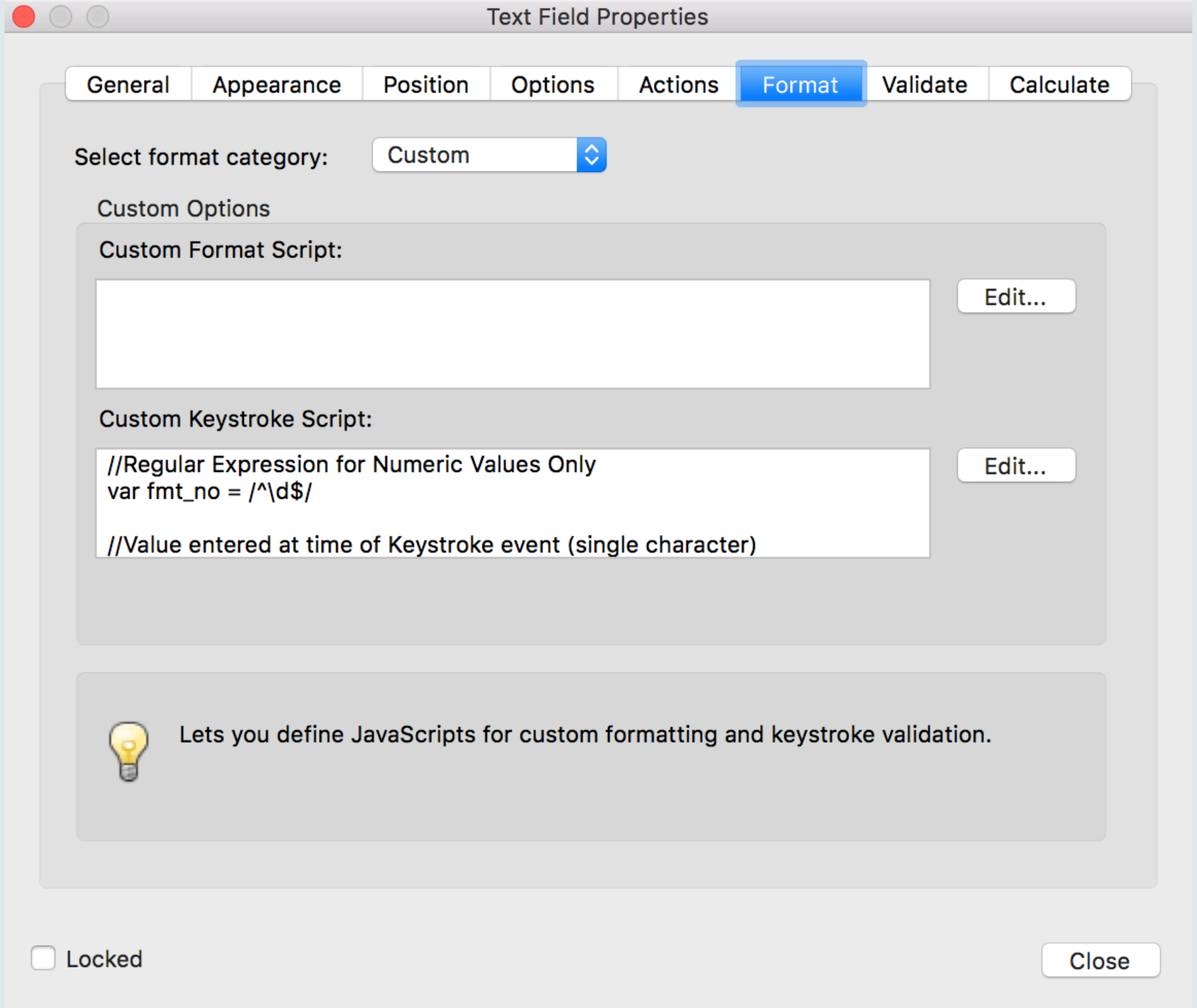
Select Trigger: Page Open

Select Action: Run a JavaScript

FORMAT AND VALIDATE

Available in Combo Box and Text Fields only.

- Keystroke scripts run before the value of the field is actually changed against the user's input.
- Format scripts run on the new value of the field, after the data is committed. Changes made in Format impact the appearance of the data in the field, not the value.



Text Field Properties

Select format category: Custom

Custom Options

Custom Format Script:

Custom Keystroke Script:

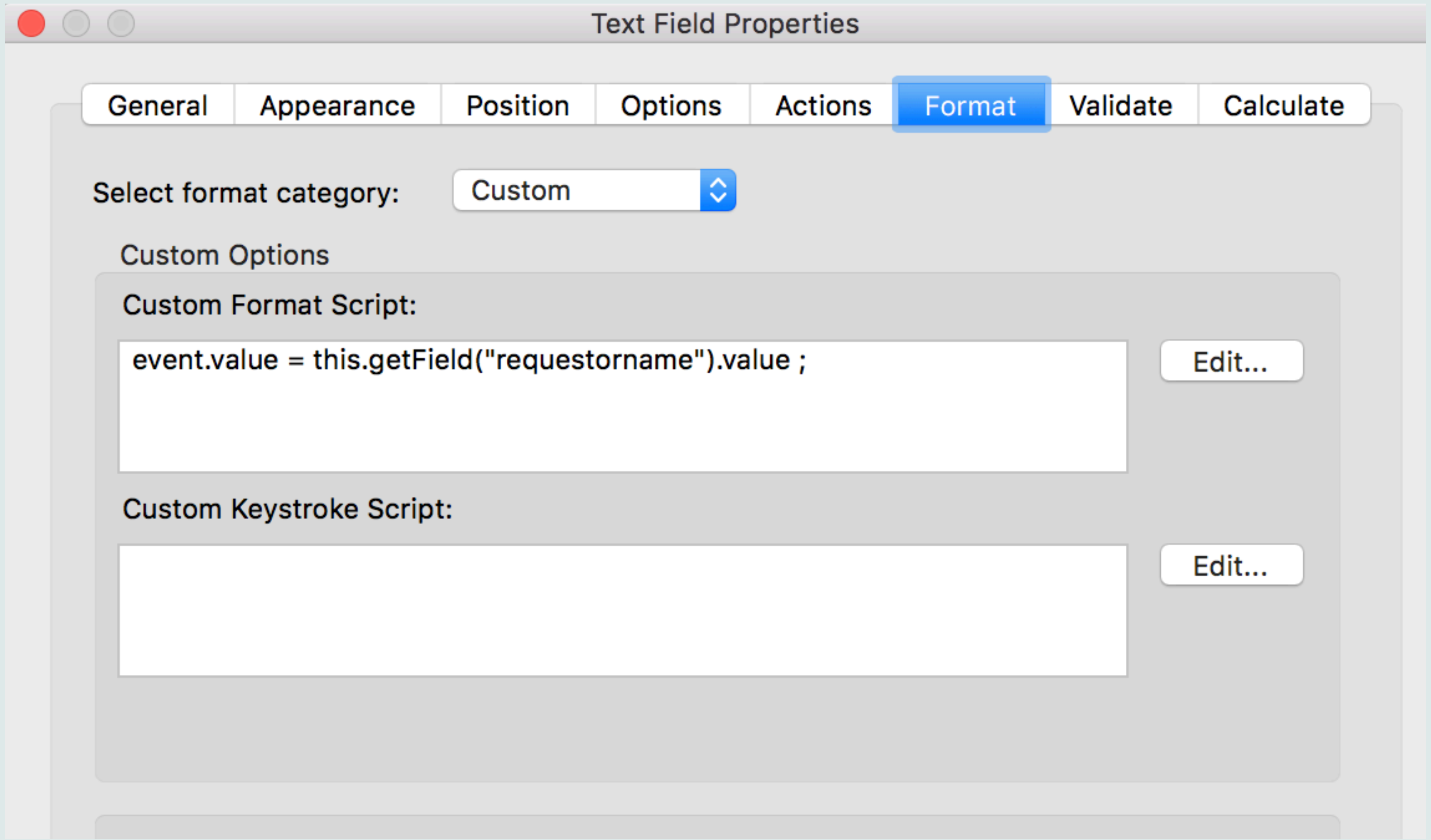
```
//Regular Expression for Numeric Values Only
var fmt_no = /^\d$/

//Value entered at time of Keystroke event (single character)
```

Lets you define JavaScripts for custom formatting and keystroke validation.

□ Locked

FORMAT EXAMPLE



Select format category: Custom

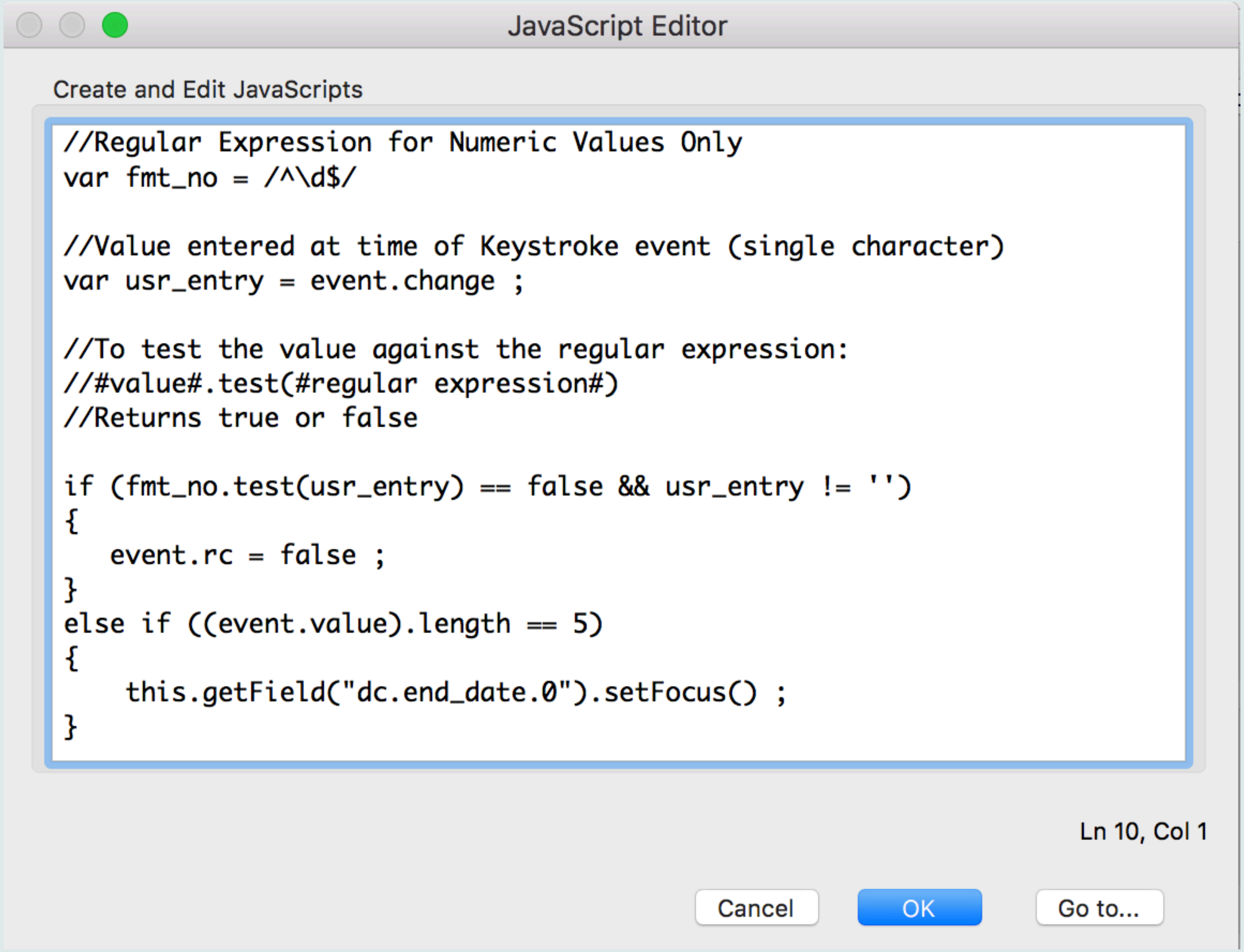
Custom Format Script:

```
event.value = this.getField("requestorname").value ;
```

Custom Keystroke Script:

- Adding this simple line to the Custom Format option will auto-populate data from one field to other fields throughout your form.
- Simply replace the text in double-quotes with the name of the field that contains your source data.

KEYSTROKE EXAMPLE



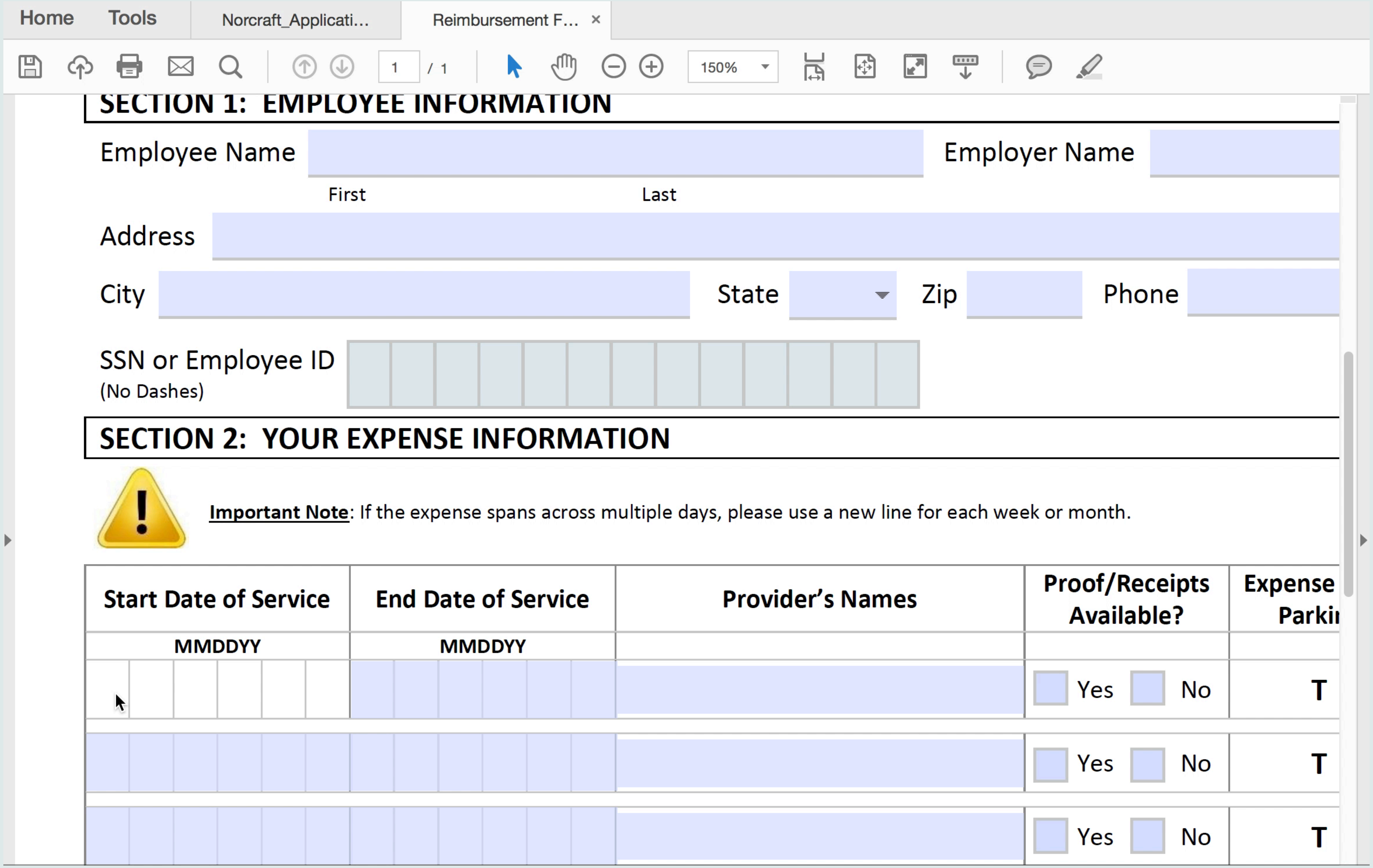
```
//Regular Expression for Numeric Values Only
var fmt_no = /^\d$/

//Value entered at time of Keystroke event (single character)
var usr_entry = event.change ;

//To test the value against the regular expression:
//#value#.test(#regular expression#)
//Returns true or false

if (fmt_no.test(usr_entry) == false && usr_entry != '')
{
   event.rc = false ;
}
else if ((event.value).length == 5)
{
    this.getField("dc.end_date.0").setFocus() ;
}
```

KEYSTROKE EXAMPLE



SECTION 1: EMPLOYEE INFORMATION

Employee Name
First Last

Employer Name

Address

City

State

Zip

Phone

SSN or Employee ID
(No Dashes)

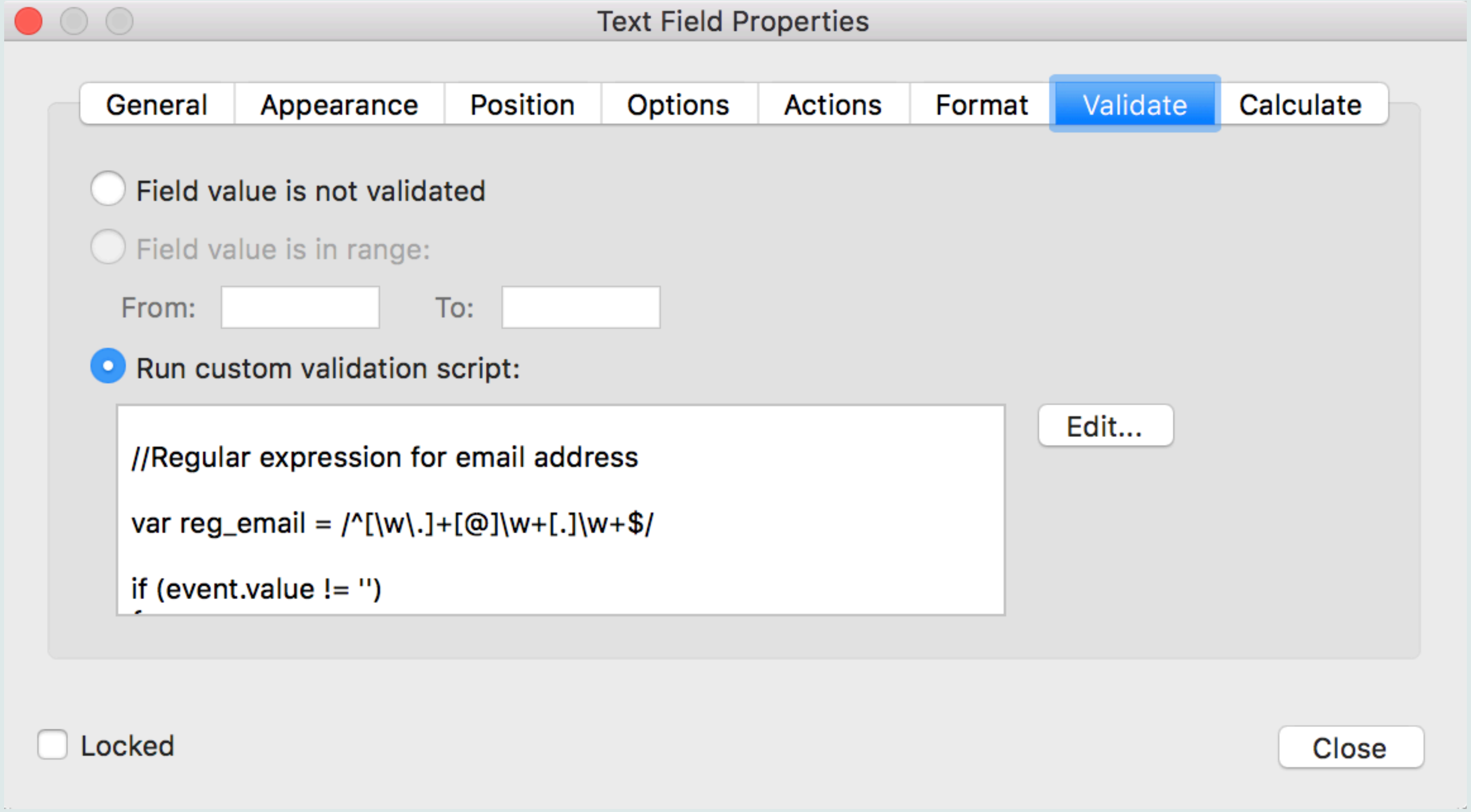
SECTION 2: YOUR EXPENSE INFORMATION

Important Note: If the expense spans across multiple days, please use a new line for each week or month.

Start Date of Service	End Date of Service	Provider's Names	Proof/Receipts Available?	Expense Parki
MMDDYY	MMDDYY			
			□ Yes □ No	T
			□ Yes □ No	T
			□ Yes □ No	T

VALIDATE

Available in Combo Box and Text Fields only.



○ Field value is not validated

○ Field value is in range:

From: To:

● Run custom validation script:

```
//Regular expression for email address

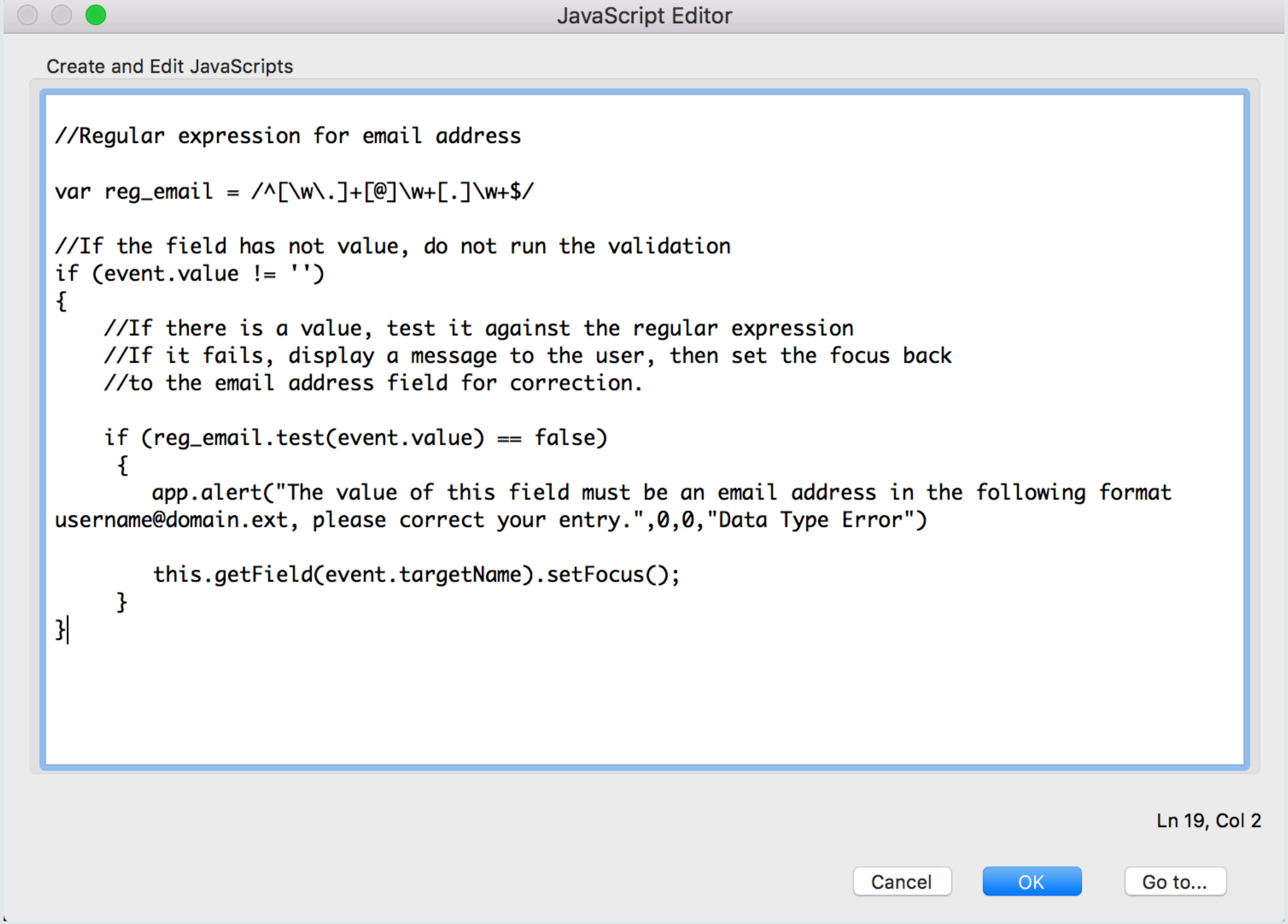
var reg_email = /^[\w\.]+[@]\w+[.]\w+$/

if (event.value != '')
```

□ Locked

- Validate scripts run on the new value of the field after the data is committed.
- The field value range feature can be used to limit values on a numeric field.

VALIDATE EXAMPLE



```
//Regular expression for email address

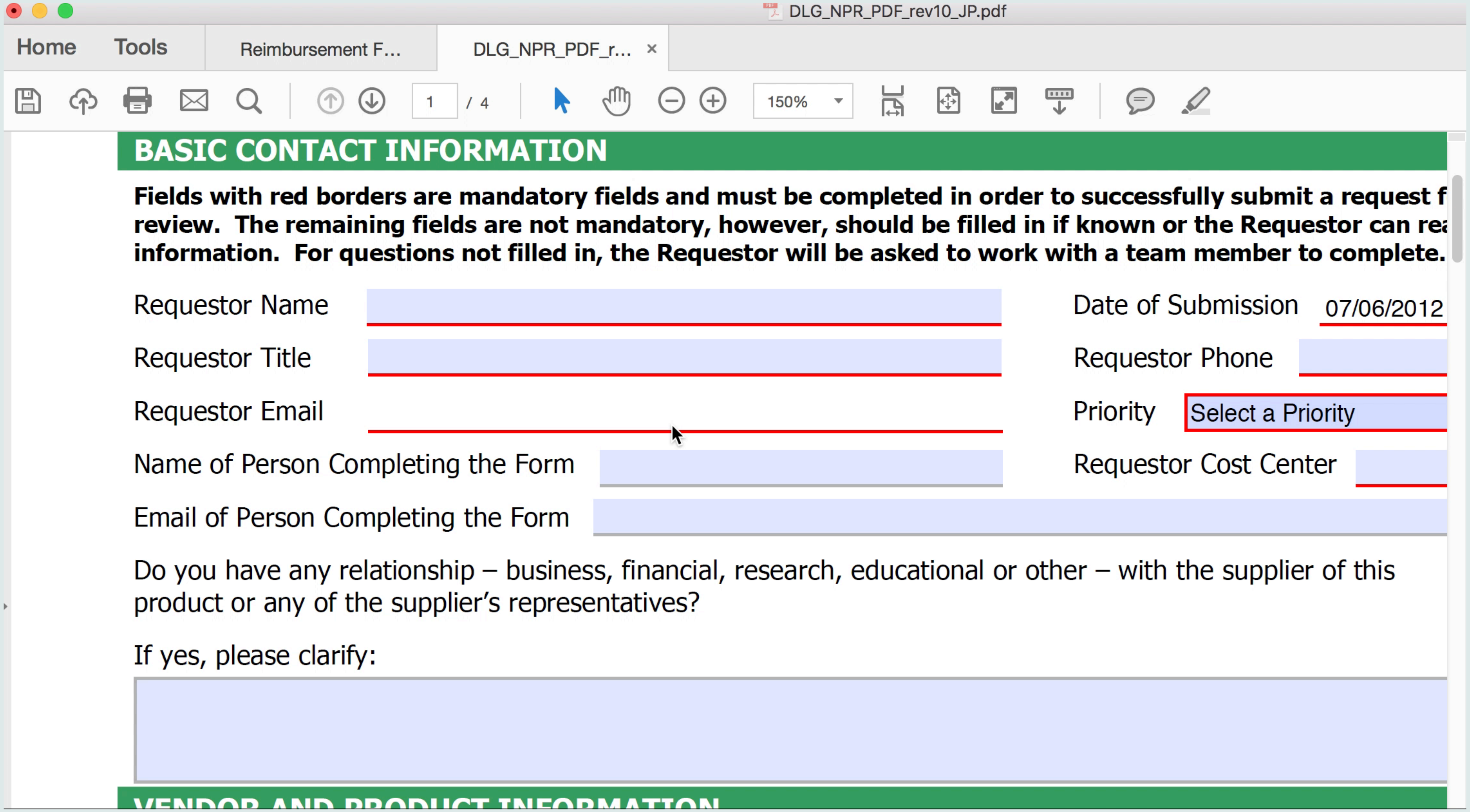
var reg_email = /^[\w\.]+[@]\w+[.]\w+$/

//If the field has not value, do not run the validation
if (event.value != '')
{
    //If there is a value, test it against the regular expression
    //If it fails, display a message to the user, then set the focus back
    //to the email address field for correction.

    if (reg_email.test(event.value) == false)
     {
        app.alert("The value of this field must be an email address in the following format
username@domain.ext, please correct your entry.",0,0,"Data Type Error")

        this.getField(event.targetName).setFocus();
     }
}
```

VALIDATE EXAMPLE



BASIC CONTACT INFORMATION

Fields with red borders are mandatory fields and must be completed in order to successfully submit a request f review. The remaining fields are not mandatory, however, should be filled in if known or the Requestor can rea information. For questions not filled in, the Requestor will be asked to work with a team member to complete.

Requestor Name

Date of Submission 07/06/2012

Requestor Title

Requestor Phone

Requestor Email

Priority Select a Priority

Name of Person Completing the Form

Requestor Cost Center

Email of Person Completing the Form

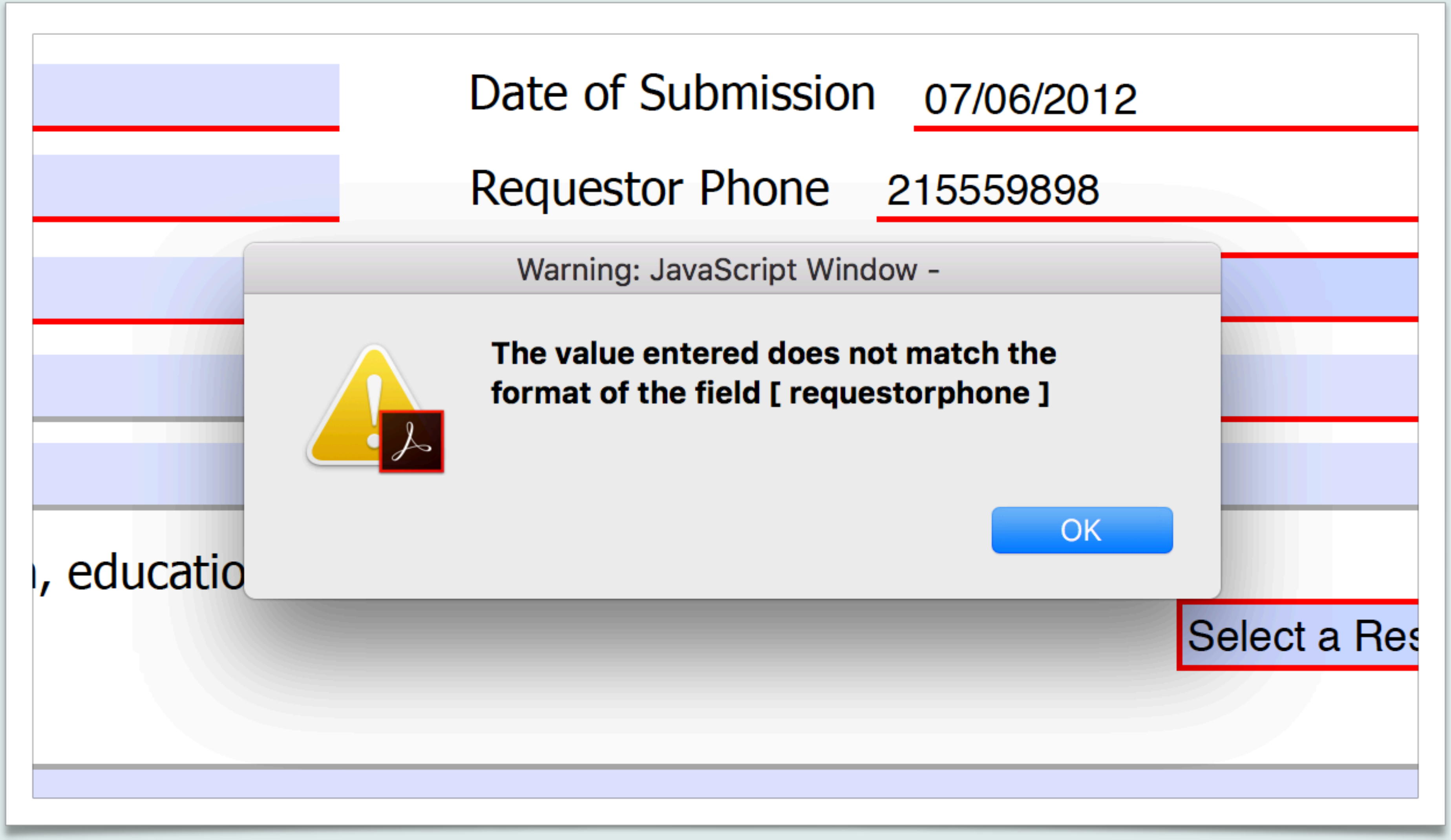
Do you have any relationship – business, financial, research, educational or other – with the supplier of this product or any of the supplier's representatives?

If yes, please clarify:

VENDOR AND PRODUCT INFORMATION

BUILT IN VALIDATION

Acrobat provides standard validation for a variety of data types.



Date of Submission 07/06/2012

Requestor Phone 215559898

Warning: JavaScript Window -

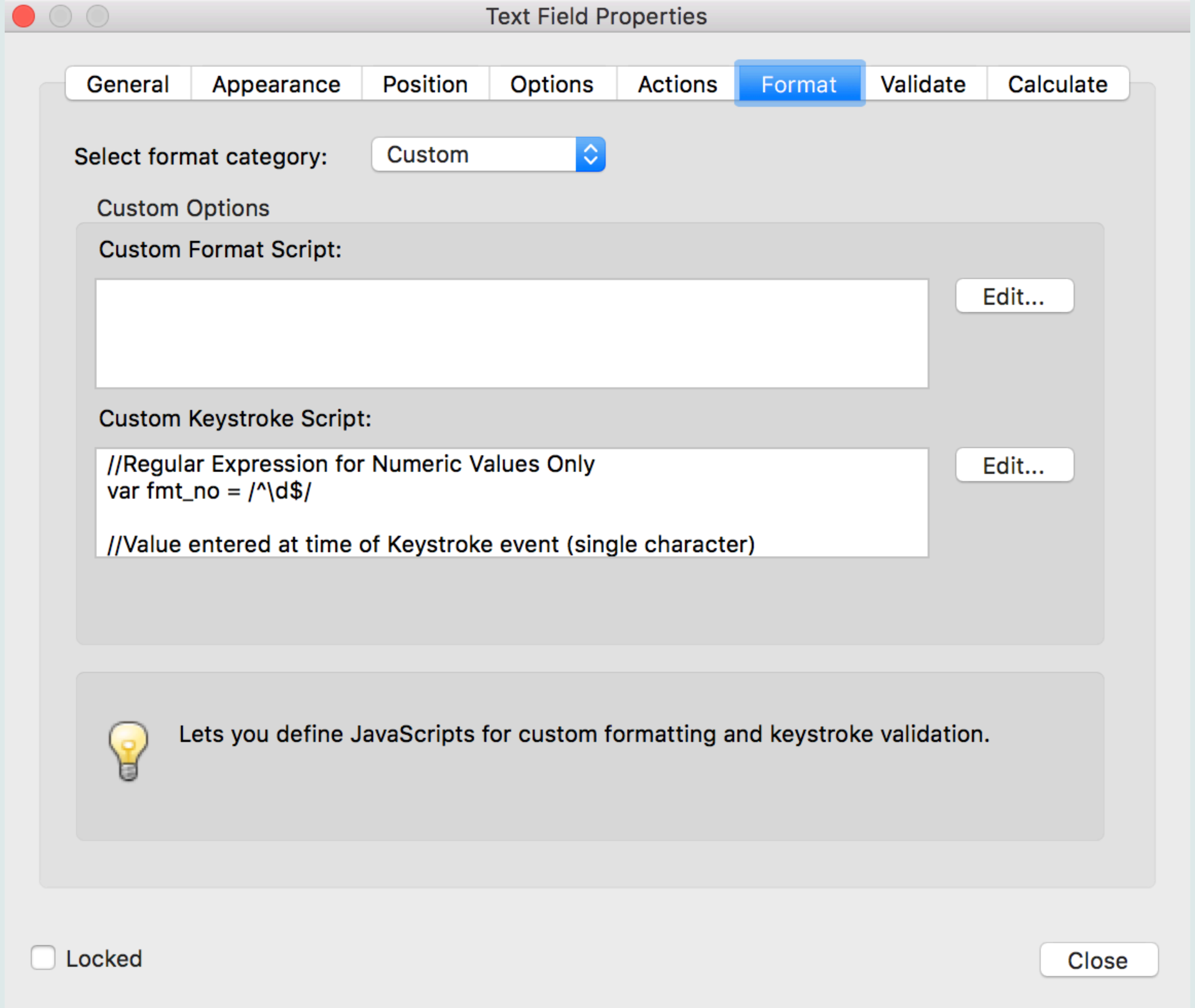
The value entered does not match the format of the field [requestorphone]

- Built in options are limited unlike JavaScript and regular expressions
- Standard validation messages are not clear to the user.

CALCULATE

Available in Combo Box and Text Fields only.

- Calculate scripts are run every time a value is changed in ANY field in the form.
- When using multiple calculations with dependencies, it is critical to set the Calculation Order.



Select format category: Custom

Custom Options

Custom Format Script:

Custom Keystroke Script:

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//Regular Expression for Numeric Values Only
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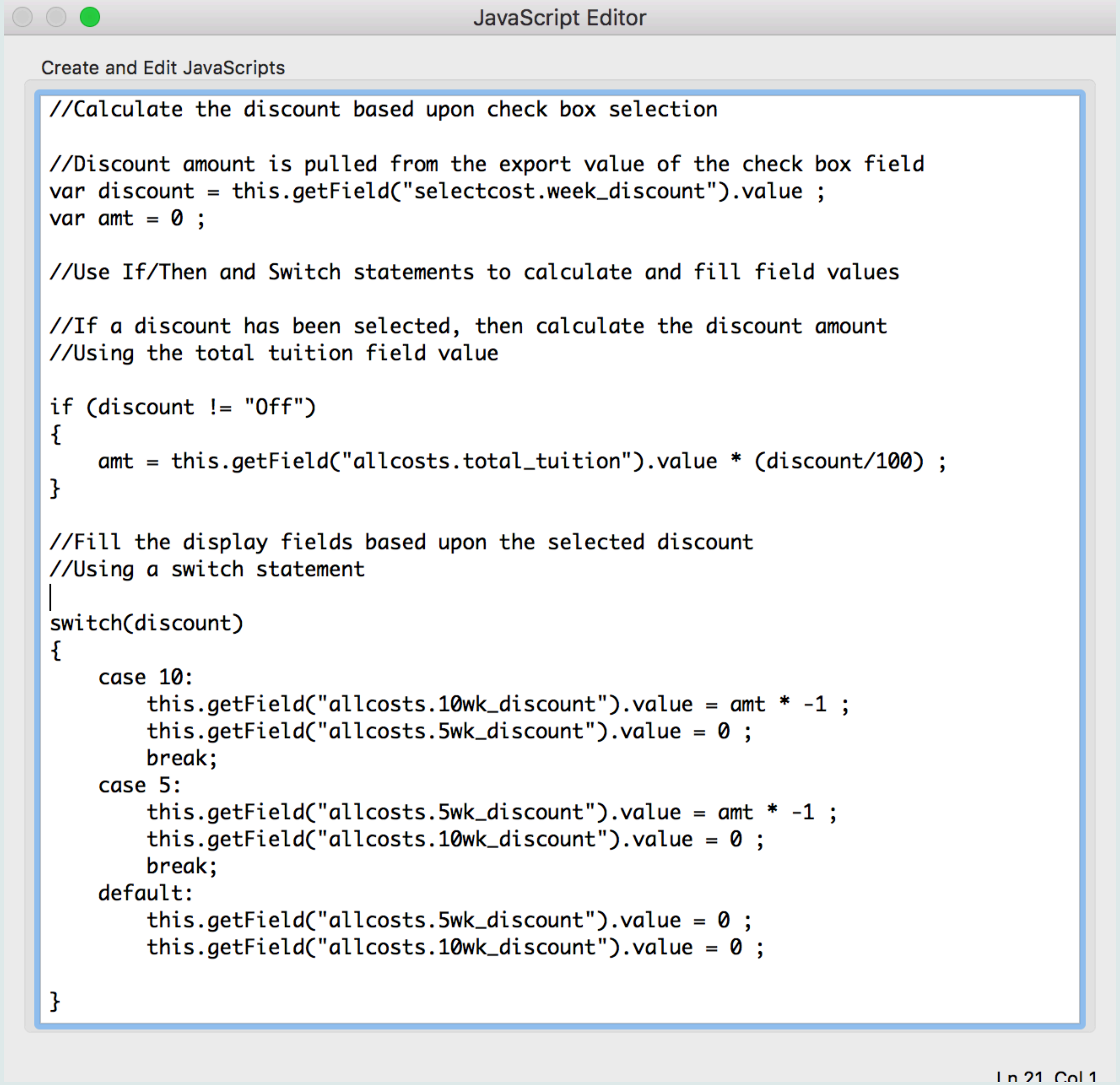
```

Lets you define JavaScripts for custom formatting and keystroke validation.

□ Locked

CALCULATE EXAMPLE



```
//Calculate the discount based upon check box selection

//Discount amount is pulled from the export value of the check box field
var discount = this.getField("selectcost.week_discount").value ;
var amt = 0 ;

//Use If/Then and Switch statements to calculate and fill field values

//If a discount has been selected, then calculate the discount amount
//Using the total tuition field value

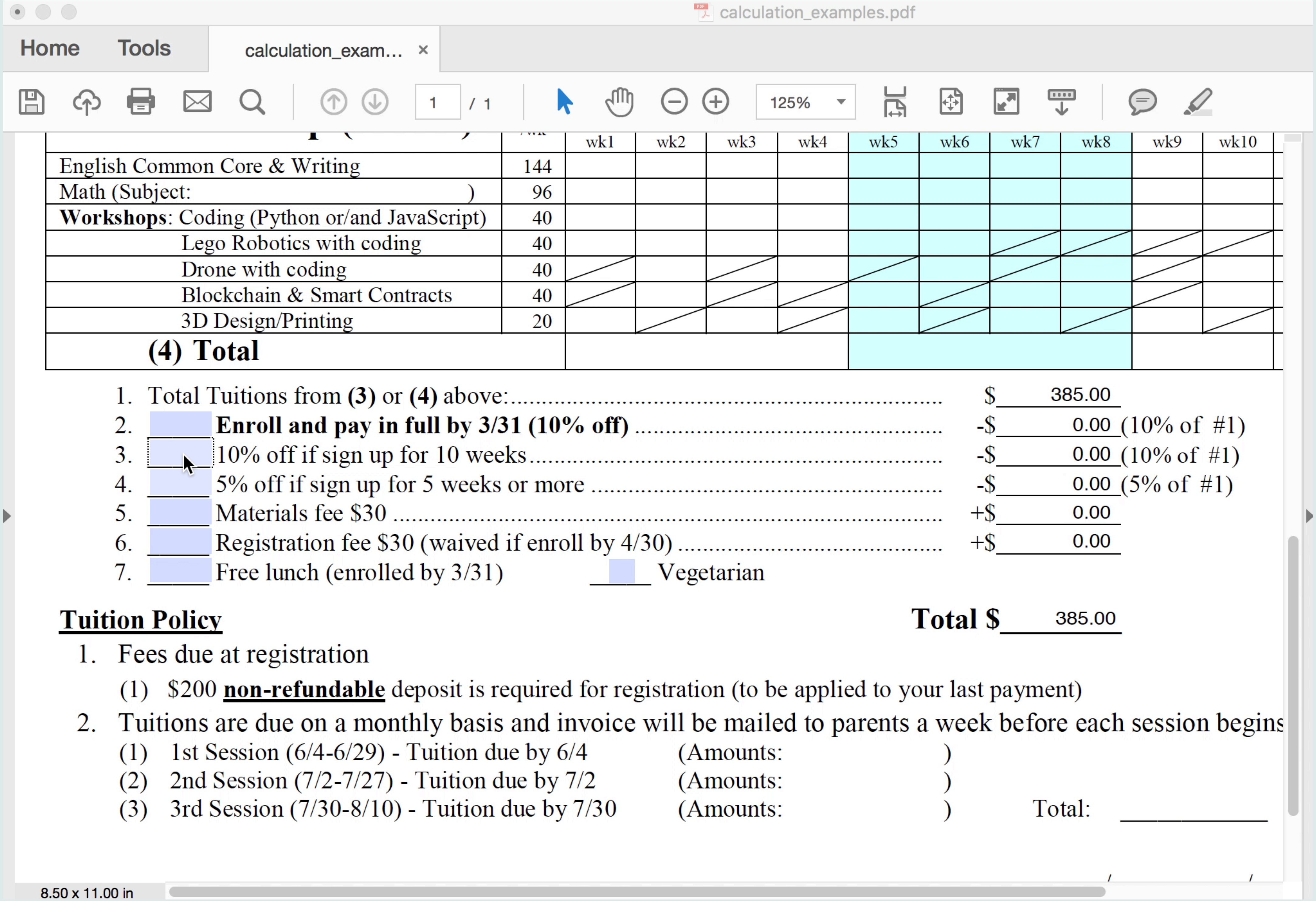
if (discount != "Off")
{
    amt = this.getField("allcosts.total_tuition").value * (discount/100) ;
}

//Fill the display fields based upon the selected discount
//Using a switch statement

switch(discount)
{
    case 10:
        this.getField("allcosts.10wk_discount").value = amt * -1 ;
        this.getField("allcosts.5wk_discount").value = 0 ;
        break;
    case 5:
        this.getField("allcosts.5wk_discount").value = amt * -1 ;
        this.getField("allcosts.10wk_discount").value = 0 ;
        break;
    default:
        this.getField("allcosts.5wk_discount").value = 0 ;
        this.getField("allcosts.10wk_discount").value = 0 ;

}
```

CALCULATE EXAMPLE



		wk1	wk2	wk3	wk4	wk5	wk6	wk7	wk8	wk9	wk10
English Common Core & Writing	144										
Math (Subject:)	96										
Workshops: Coding (Python or/and JavaScript)	40										
Lego Robotics with coding	40										
Drone with coding	40										
Blockchain & Smart Contracts	40										
3D Design/Printing	20										
(4) Total											

1. Total Tuitions from **(3)** or **(4)** above:	$	385.00	
2. ____ **Enroll and pay in full by 3/31 (10% off)**	-$	0.00	(10% of #1)
3. ____ 10% off if sign up for 10 weeks	-$	0.00	(10% of #1)
4. ____ 5% off if sign up for 5 weeks or more	-$	0.00	(5% of #1)
5. ____ Materials fee $30	+$	0.00	
6. ____ Registration fee $30 (waived if enroll by 4/30)	+$	0.00	
7. ____ Free lunch (enrolled by 3/31) ____ Vegetarian			

Total $ 385.00

Tuition Policy

1. Fees due at registration
   (1) $200 **non-refundable** deposit is required for registration (to be applied to your last payment)
2. Tuitions are due on a monthly basis and invoice will be mailed to parents a week before each session begins
   (1) 1st Session (6/4-6/29) - Tuition due by 6/4 (Amounts:)
   (2) 2nd Session (7/2-7/27) - Tuition due by 7/2 (Amounts:)
   (3) 3rd Session (7/30-8/10) - Tuition due by 7/30 (Amounts:) Total: ____________

REFERENCING FIELDS

Fields are referenced directly by field name:

```
this.getField(“NameOfFieldHere”).value ;
```

Or by using the ‘numFields’ and ‘getNthFieldName’ document properties/methods, you can loop through all fields in a document.

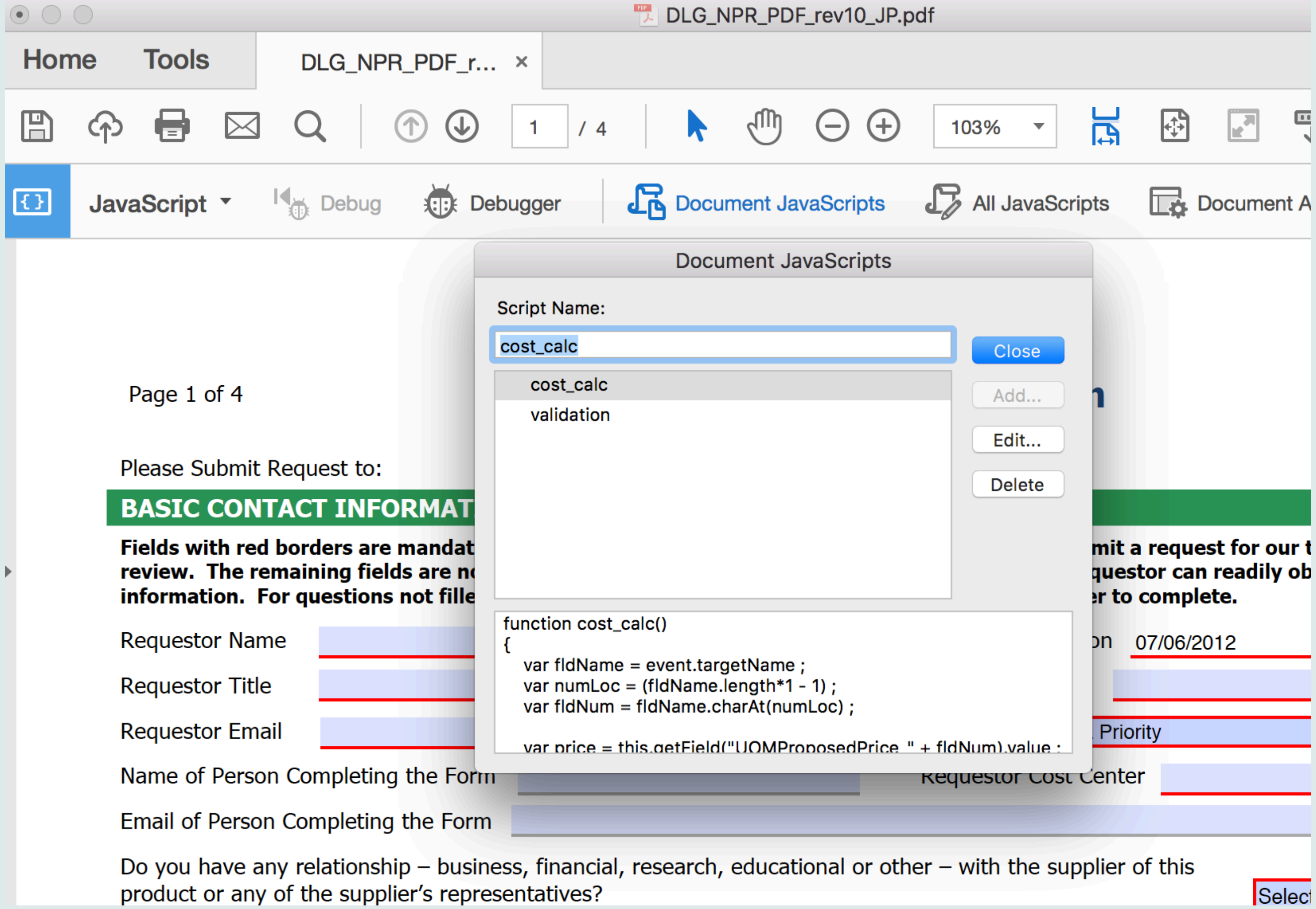
```
for (var fldCnt = 0 ; fldCnt < this.numFields ; fldCnt++)

{

this.getField(this.getNthFieldName(fldCnt)).value ;

}
```

DOCUMENT LEVEL SCRIPTS



Script Name: cost_calc

- cost_calc
- validation

```
function cost_calc()
{
   var fldName = event.targetName ;
   var numLoc = (fldName.length*1 - 1) ;
   var fldNum = fldName.charAt(numLoc) ;

   var price = this.getField("UOMProposedPrice_" + fldNum).value ;
```

Fields with red borders are mandat… review. The remaining fields are n… information. For questions not fille… …mit a request for our t… …questor can readily ob… …er to complete.

Do you have any relationship – business, financial, research, educational or other – with the supplier of this product or any of the supplier's representatives?

- Variables and Functions at the document level can be called from anywhere in the form.
- Scripts can be maintained in one place for consistency and used throughout the form.

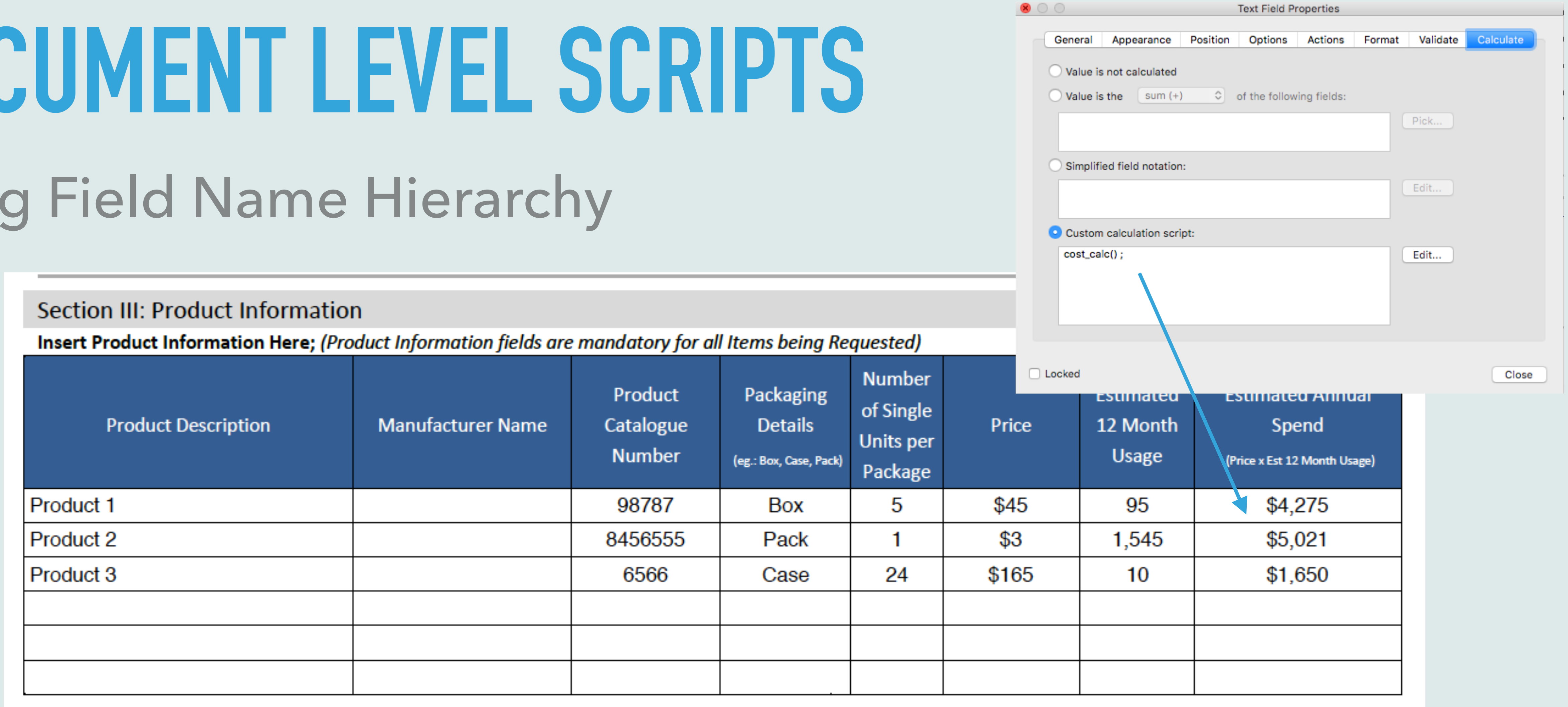
DOCUMENT LEVEL SCRIPTS

How to keep scripts generic.

- Event.targetName = The name of the field that calls the script or function.
- Event.value = The value of the field that calls the script or function. This works well for text fields.
- this.getField(event.targetName).value = The value of the field that calls the script or function. This works better for check boxes and drop down lists.

DOCUMENT LEVEL SCRIPTS

Using Field Name Hierarchy



Section III: Product Information

Insert Product Information Here; ***(Product Information fields are mandatory for all Items being Requested)***

Product Description	Manufacturer Name	Product Catalogue Number	Packaging Details (eg.: Box, Case, Pack)	Number of Single Units per Package	Price	Estimated 12 Month Usage	Estimated Annual Spend (Price x Est 12 Month Usage)
Product 1		98787	Box	5	$45	95	$4,275
Product 2		8456555	Pack	1	$3	1,545	$5,021
Product 3		6566	Case	24	$165	10	$1,650

Text Field Properties

○ Value is not calculated

○ Value is the sum (+) of the following fields:

○ Simplified field notation:

● Custom calculation script:

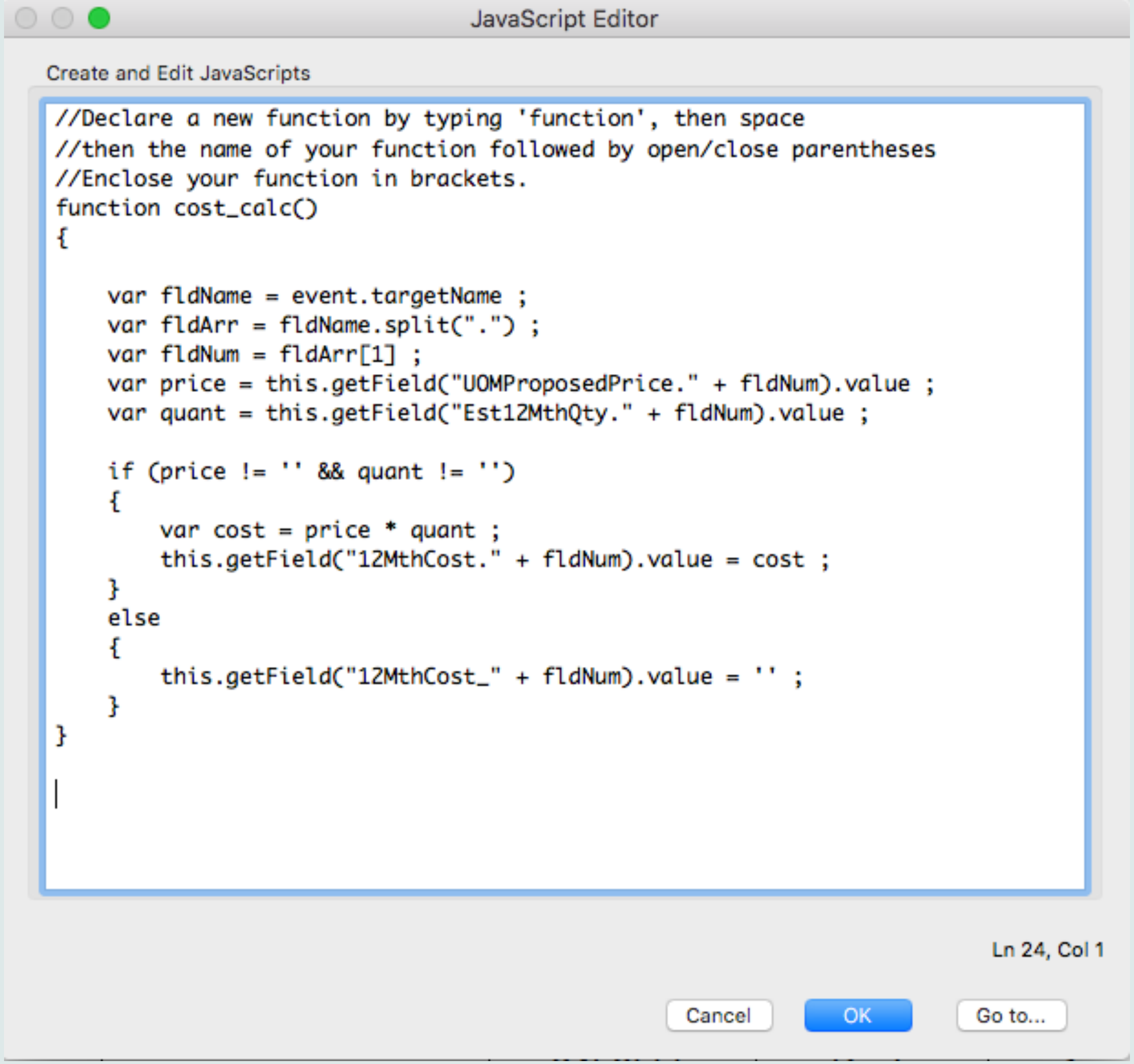
```
cost_calc() ;
```

□ Locked

- Using hierarchical field names and document level scripts reduced the overall number of scripts in your form.
- Call your document level function by typing the function name, then open/close parentheses.

DOCUMENT LEVEL SCRIPTS

Using Field Name Hierarchy



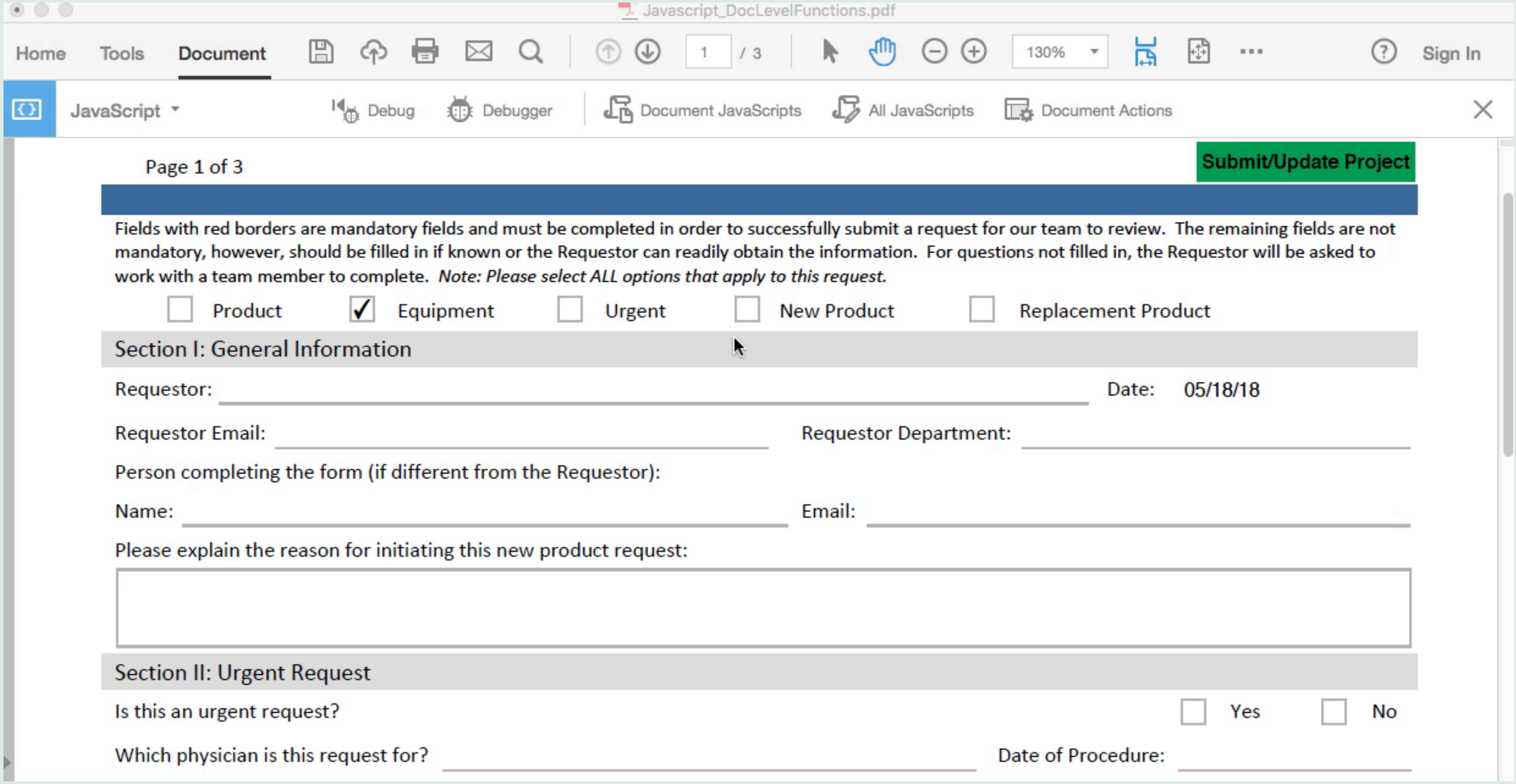
```
//Declare a new function by typing 'function', then space
//then the name of your function followed by open/close parentheses
//Enclose your function in brackets.
function cost_calc()
{

    var fldName = event.targetName ;
    var fldArr = fldName.split(".") ;
    var fldNum = fldArr[1] ;
    var price = this.getField("UOMProposedPrice." + fldNum).value ;
    var quant = this.getField("Est12MthQty." + fldNum).value ;

    if (price != '' && quant != '')
    {
        var cost = price * quant ;
        this.getField("12MthCost." + fldNum).value = cost ;
    }
    else
    {
        this.getField("12MthCost_" + fldNum).value = '' ;
    }
}
```

DOCUMENT LEVEL VALIDATION SCRIPT

This example uses a document level script and loops through all the fields on the form.



Page 1 of 3

Submit/Update Project

Fields with red borders are mandatory fields and must be completed in order to successfully submit a request for our team to review. The remaining fields are not mandatory, however, should be filled in if known or the Requestor can readily obtain the information. For questions not filled in, the Requestor will be asked to work with a team member to complete. *Note: Please select ALL options that apply to this request.*

□ Product ☑ Equipment □ Urgent □ New Product □ Replacement Product

Section I: General Information

Requestor: ______ Date: 05/18/18

Requestor Email: ______ Requestor Department: ______

Person completing the form (if different from the Requestor):

Name: ______ Email: ______

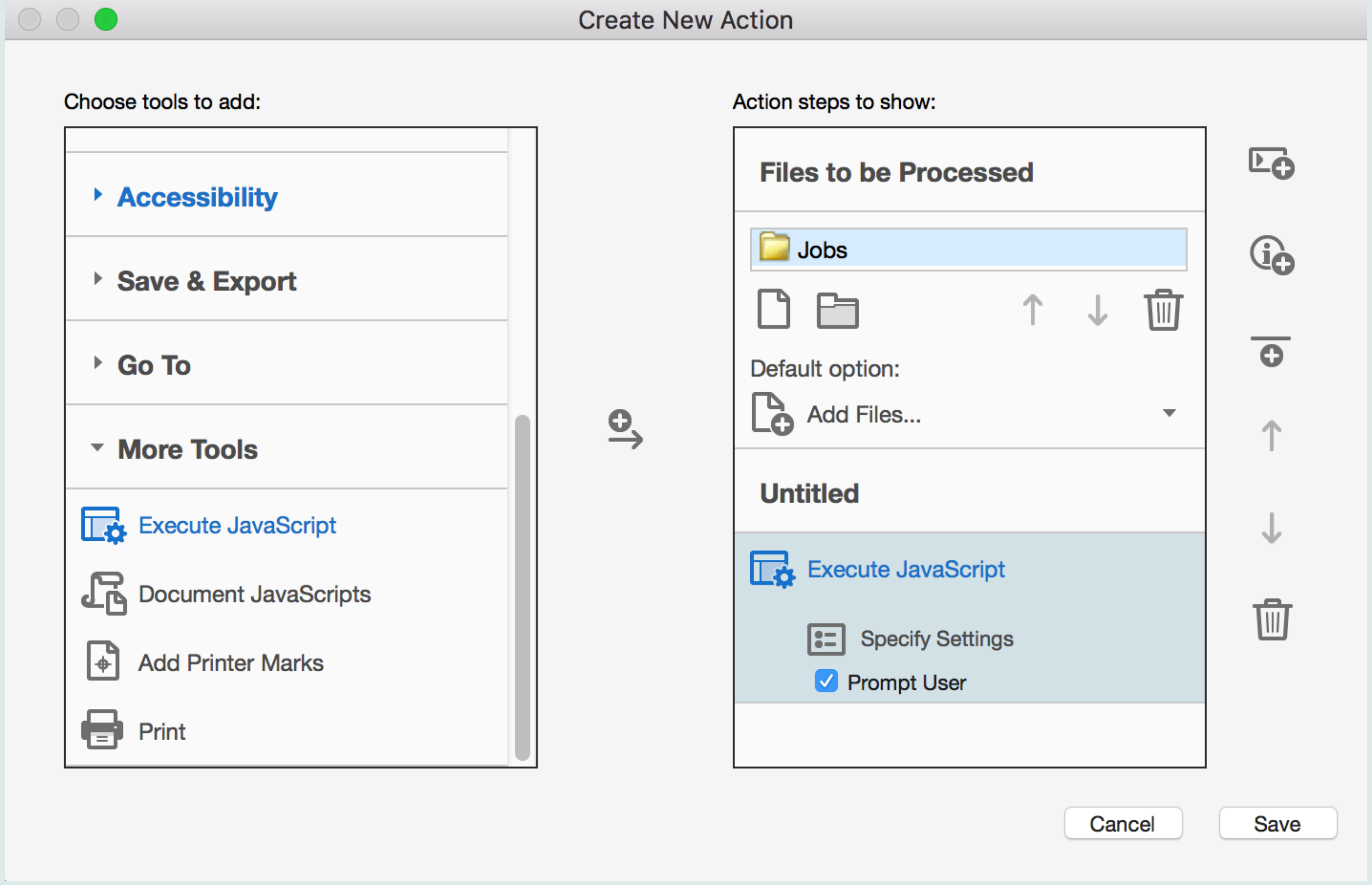
Please explain the reason for initiating this new product request:

Section II: Urgent Request

Is this an urgent request? □ Yes □ No

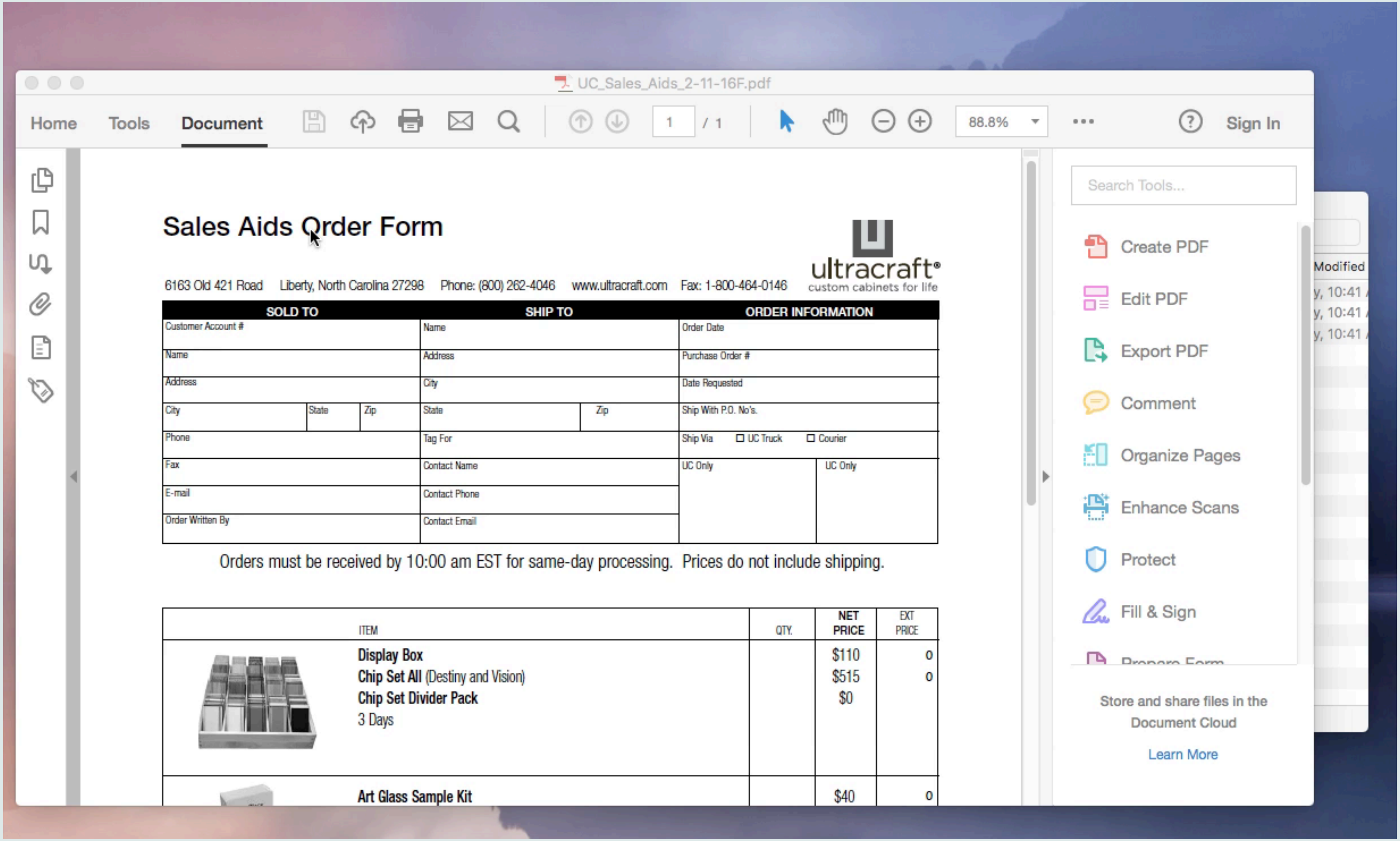
Which physician is this request for? ______ Date of Procedure: ______

ACTION WIZARD



- Run complex scripts against multiple files at once.
- Access to features that are not available when calling scripts from a form object in an open document.

ACTION WIZARD EXAMPLE – DATA MERGE



Store and share files in the Document Cloud

Sales Aids Order Form

ultracraft® custom cabinets for life

6163 Old 421 Road   Liberty, North Carolina 27298   Phone: (800) 262-4046   www.ultracraft.com   Fax: 1-800-464-0146

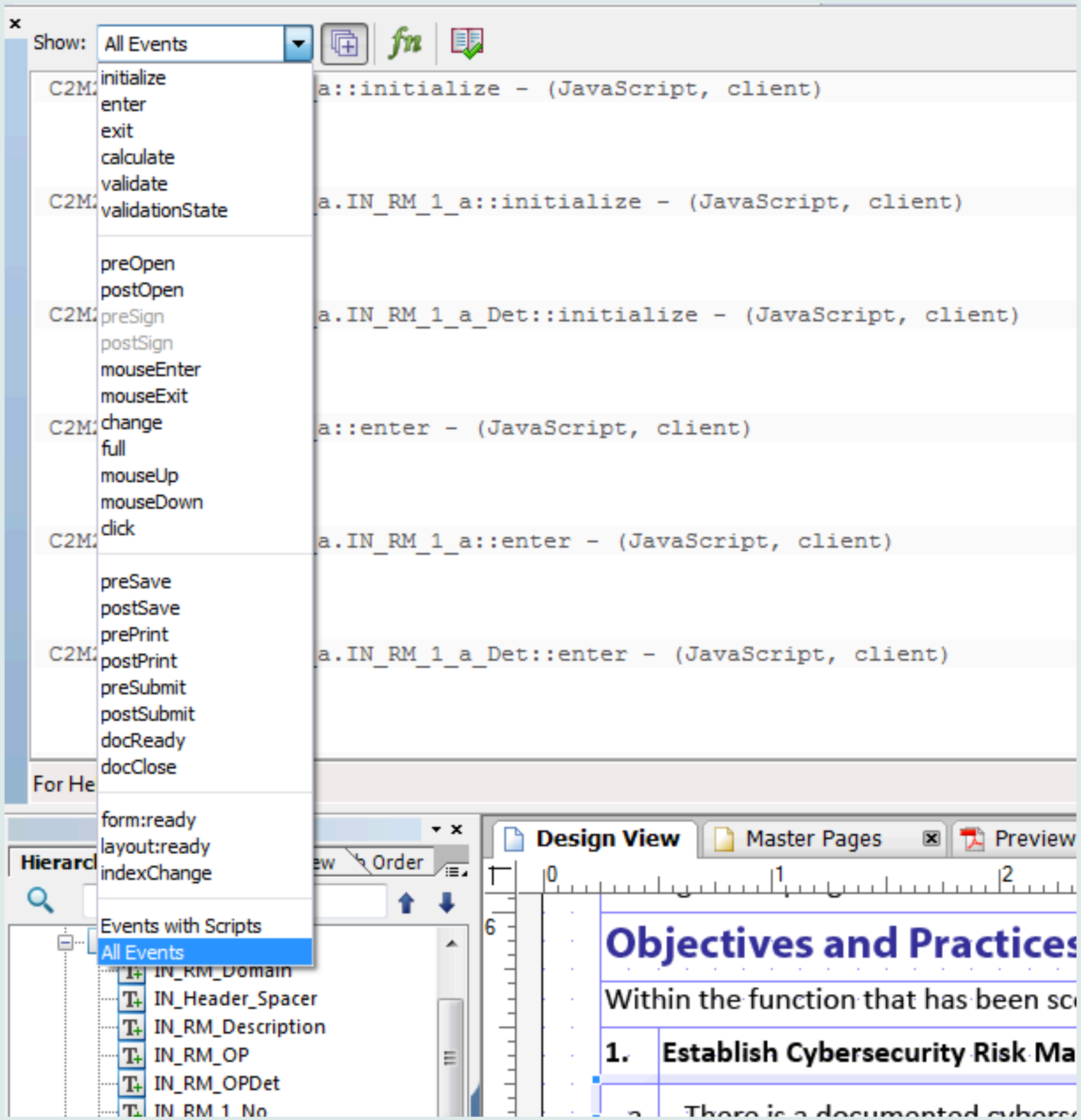
SOLD TO	**SHIP TO**	**ORDER INFORMATION**
Customer Account #	Name	Order Date
Name	Address	Purchase Order #
Address	City	Date Requested
City State Zip	State Zip	Ship With P.O. No's.
Phone	Tag For	Ship Via □ UC Truck □ Courier
Fax	Contact Name	UC Only UC Only
E-mail	Contact Phone	
Order Written By	Contact Email	

Orders must be received by 10:00 am EST for same-day processing. Prices do not include shipping.

ITEM	QTY.	NET PRICE	EXT PRICE
Display Box **Chip Set All** (Destiny and Vision) **Chip Set Divider Pack** 3 Days		$110 $515 $0	0 0
Art Glass Sample Kit		$40	0

XFA FORMS – JAVASCRIPT IN EVENTS

- XFA forms allow users to assign scripts to Events associated with all types of form objects.
- When an object is selected, all available events will display in the scripting window drop down.
- Events that are not available for that object will be grayed out.



```
C2M2 a::initialize - (JavaScript, client)
C2M2 a.IN_RM_1_a::initialize - (JavaScript, client)
C2M2 a.IN_RM_1_a_Det::initialize - (JavaScript, client)
C2M2 a::enter - (JavaScript, client)
C2M2 a.IN_RM_1_a::enter - (JavaScript, client)
C2M2 a.IN_RM_1_a_Det::enter - (JavaScript, client)
```

IN_RM_Domain
IN_Header_Spacer
IN_RM_Description
IN_RM_OP
IN_RM_OPDet
IN_RM_1_No

Objectives and Practices

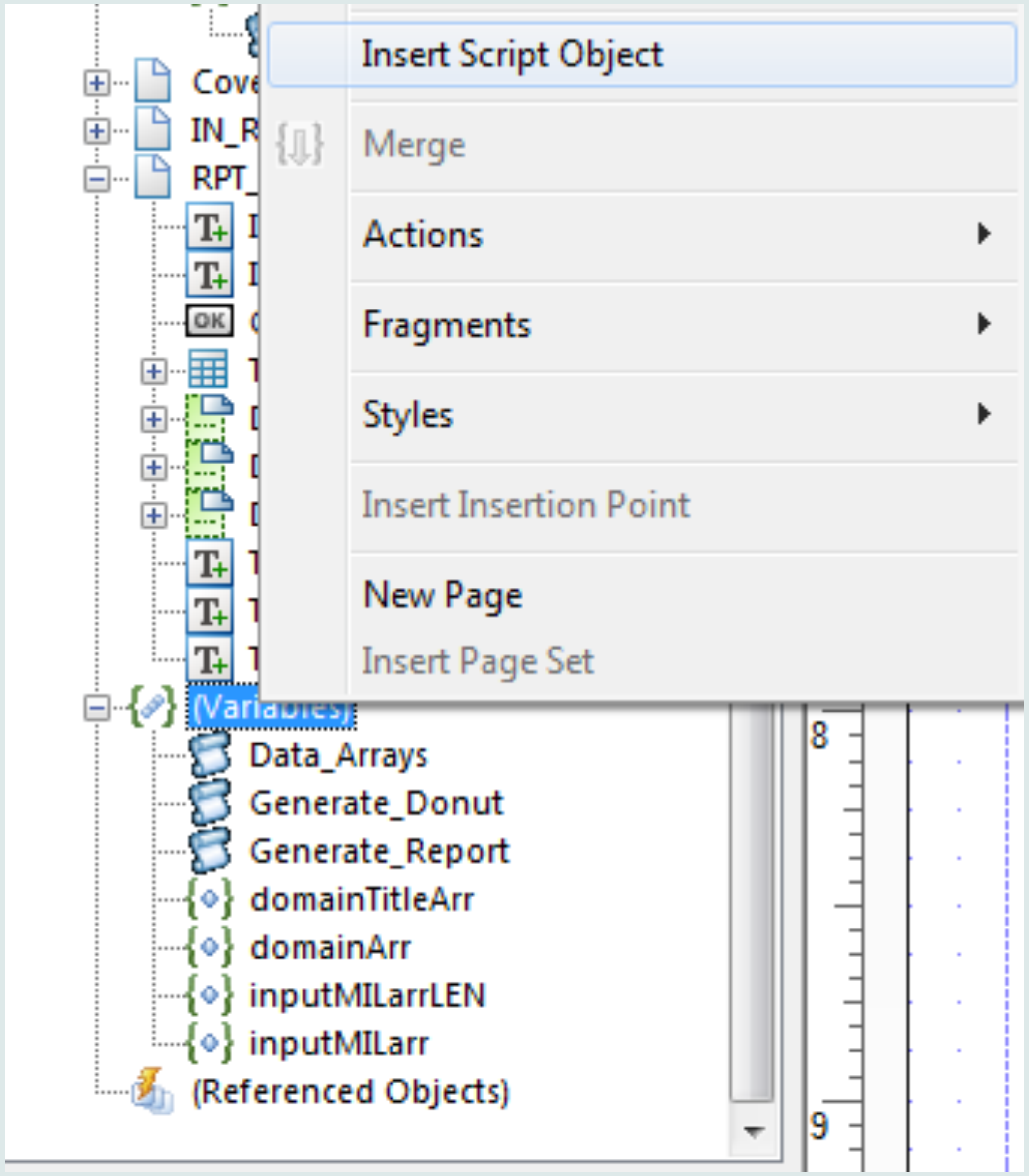
Within the function that has been sc

1. Establish Cybersecurity Risk Ma

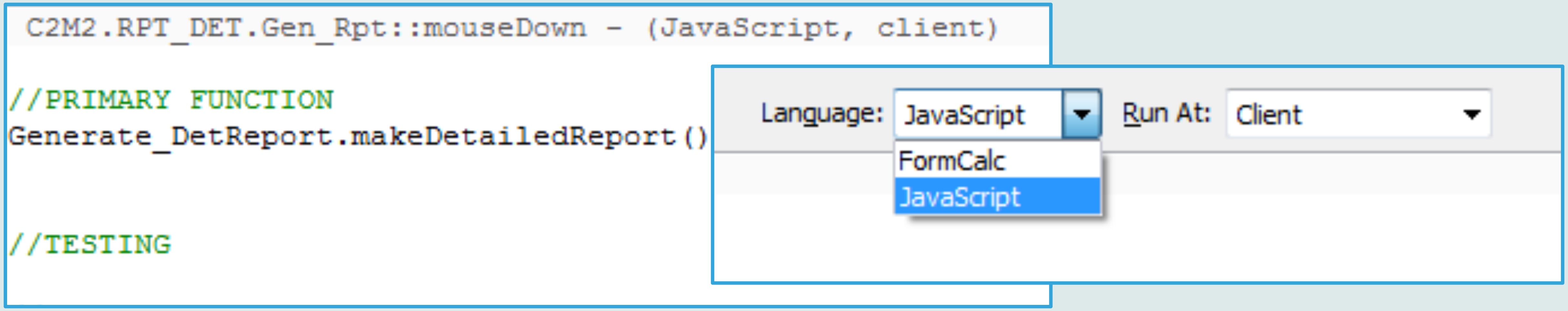
a. There is a documented cybers

XFA FORMS – DOCUMENT LEVEL SCRIPTS

- Add scripts at the Form level by Inserting a Script Object .
- Scripts can be maintained in one place for consistency and used throughout the form.
- Global variables must be set in File > Form Properties > Variables.



FORMCALC VS. JAVASCRIPT



```
C2M2.RPT_DET.Gen_Rpt::mouseDown - (JavaScript, client)

//PRIMARY FUNCTION
Generate_DetReport.makeDetailedReport()


//TESTING
```

Language: JavaScript Run At: Client

- Both languages can be used in the same form.
- The expected language is noted both in the Scripting Window editor and in the toolbar.
- Can only call functions from the same language.

Calling FormCalc Functions from JavaScript
John Brinkman for Adobe
http://blogs.adobe.com/formfeed/2009/02/calling_formcalc_functions_fro.html

REFERENCING FIELDS OR OBJECTS

Fields or objects can be referenced directly by their reference string:

```
var weight = General_Info.Gen_SubWt.Gen_SubWt_lbs.rawValue
```

Or by using the resolveNode method with that string, useful in keeping scripts generic:

```
var fldName = “General_Info.Gen_SubWt.Gen_SubWt_lbs"

xfa.resolveNode(fldName).rawValue
```

Referencing Objects in Calculations and Scripts

Adobe LiveCycle ES4

https://help.adobe.com/en_US/livecycle/11.0/DesignerScriptingBasics/index.html

REFERENCING FIELDS OR OBJECTS

You can also loop through a set of table Nodes or Subforms:

```
var allCircles = xfa.resolveNodes(“RM_RPT_1.Pie.Bow”)

for (var i = 0; i < circleName.length; i++) {
    allBows.item(i).value.arc.sweepAngle = Sweep ;}
```

Or table Nodes:

```
var oNodes = Invest_Prod_All.InvProd_Table.IP_Row1.nodes;
var nodesLength = 6;

for (var i = 0; i < nodesLength; i++)
{
  var chk = oNodes.item(i).rawValue
}
```

MOBILE SUPPORT FOR JS

MOBILE VIEWER SUPPORT

Adobe Acrobat Reader Mobile

iOS and Android

FREE

Limited support for custom javascript.

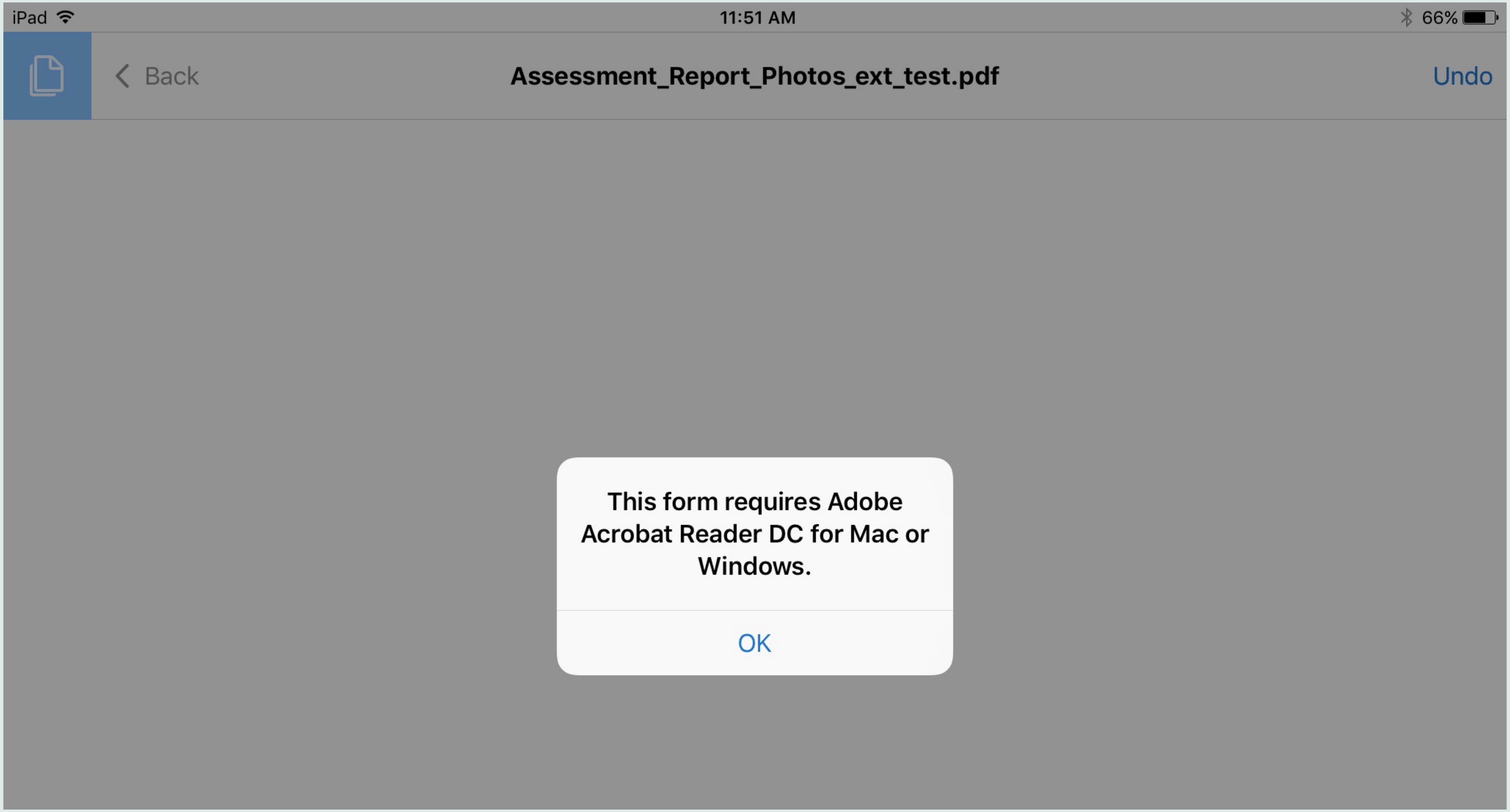
PDF Expert

iOS Only

$9.99

Strong support for custom javascript, but must be tested on a case by case basis.

XFA FORMS ON MOBILE DEVICES



This form requires Adobe Acrobat Reader DC for Mac or Windows.

OTHER JAVASCRIPT IMPLEMENTATIONS

- Show/Hide Fields
- Cascading Drop-down menus
- Required field validation
- Populate fields with common data
- Custom form submission
- SOAP calls
- PDF as stand-alone data gathering ‘application’

QUESTIONS?

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